



Center Panel of Frieze of Seven Panels presented to the Massachusetts Institute of Technology and placed in Huntington Hall by the Class of 1905.

For other six panels see page 303.

# technology review

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# The Technology Review

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## THE "PROPOSED AGREEMENT" WITH HARVARD UNIVERSITY.

On May 4, 1904, the Corporation of the Institute, by a majority vote, passed the following motion:—

That the Executive Committee be requested to ascertain whether any arrangement can be made with Harvard University for a combination of effort in technical education such as will substantially preserve the organization, control, traditions, and the name of the Massachusetts Institute of Technology.

On Dec. 14, 1904, the same body voted:—

That the President is authorized to request, on the part of the Corporation, the opinion of the Faculty as to the possible advantages or disadvantages of the proposed plan for a combination of effort with Harvard University from an educational standpoint, and is authorized further to refer the plan to the alumni for an expression of their opinion in regard to it, all this information to be available to the Corporation before definite action is taken.

On March 24, 1905, the Executive Committee of the Corporation presented to that body, without comment, a "Proposed Agreement" between the Institute and Harvard University, prepared, in obedience to the vote of May, 1904, by a Conference Committee, of which President Pritchett and Professor A. Lawrence Lowell were the members representing the Institute. This "Proposed Agreement" was discussed on that day, and again on March 30; but the Corporation took no action other than to vote:—

That the question [of the proposed agreement] be referred to the Faculty and alumni, and their opinion be reported to the Corporation not later than June 1, 1905.

On May 5, 1905, in response to the Corporation's request, and after exhaustive consideration and debate, the Faculty, by a vote of fifty-six to seven, adopted a comprehensive report, declaring the "Proposed Agreement" to be, in their opinion, educationally unsound and prejudicial to the Institute's development.

On June 1, 1905, also in response to the Corporation's request, the Executive Committee of the Alumni Association reported to the President the manner in which the vote of the alumni had been secured, and the results of that vote, as follows:—

Alumni in favor of the proposed agreement . . . . .	458
Alumni opposed to proposed agreement . . . . .	1,351
Alumni unclassified . . . . .	22
Former students (not graduates) in favor of proposed agreement . .	376
Opposed to proposed agreement . . . . .	684
Unclassified . . . . .	11

The report of the Faculty (eight to one) against the "Proposed Agreement" and the figures of the alumni vote (graduates, three to one, and non-graduates, two to one, against the agreement) being before the Corporation, that body, on June 9, 1905, nevertheless voted (twenty-three to fifteen in a total membership of forty-seven) that

The Executive Committee be requested, when they may ascertain that the Institute has power to sell the land on which it now stands, to propose to Harvard University an agreement upon the terms of the tentative plan now before this Corporation.

To appreciate the full significance of this action of the Corporation in its relation to the opinions of the Faculty and alumni, it is necessary to recall the earlier statements of the President of the Institute, who is the only official means of communication between



the Corporation and the other two bodies, and those of other members of the Corporation favorable to the alliance.

Citing only such formal statements as are on record in the REVIEW, we find the following in the President's Inaugural Address (Vol. III. p. 49):—

I prefer to think of such an institution as that in which we work together not as an empire governed by the few, but as a republic in which faculty and students alike are charged with the government of the whole body.

In the address of the President at the Reunion Dinner at the Hotel Somerset, June 8, 1904, he said (Vol. VI. pp. 357 and 360):—

Just one word more as to the intention of the Corporation. It has never entered the mind of any of those gentlemen to settle this matter in a corner, to go to the consideration of any definite plan without giving to the members of the Faculty and to the alumni a full chance to record their deliberate opinion and conviction. If any such definite plan can be compassed, such as the resolution passed by the Corporation contemplates, it shall go to you in full time, that you may express and record your opinion. . . .

Whenever any plan of co-operation with Harvard University is formulated, it shall be communicated to the members of the Faculty, to the alumni, and their full and deliberate opinion obtained. All we ask is that, when this matter does come to you, it may be dealt with soberly, fairly, wisely, and in full view of all that is involved in it.

The next statement is from the Faculty Records of June 8, 1904 (Vol. VI. p. 413):—

The President thereupon stated . . . “that, if he had given the Faculty the general understanding that it should have opportunity for presentation of a collective expression, he would certainly undertake to carry out this understanding at the proper time; that the Corporation fully appreciated the moral rights of the Faculty in the consideration of the whole question.”

The Dean stated that he believed it to be the understanding of the Faculty that the President had stated that there would be opportunity for a collective expression of opinion.

The President stated that there would be opportunity for such procedure.

The fifth quotation is from the report of the Executive Committee of the Alumni Association (Vol. VII. p. 49):—

The following procedure, outlined in the recommendations of the Association of class secretaries given below, and adopted by the Executive Committee after consultation with the President of the Institute, is presented for the information of alumni:—

The Association of Class Secretaries respectfully recommends to the Executive Committee of the Alumni Association that, whenever the plan of combination of effort of the Institute with Harvard College is referred to the alumni, the Executive Committee seek to carry out the following method of procedure:—

1. That a general meeting of alumni be held for the systematic discussion of the plan presented.
2. That a report of this discussion, in print, be sent to the alumni generally.
3. That, with the report of the general meeting, there be presented to the alumni, if possible, the opinion of the Faculty on the educational issues involved.
4. That thereupon the definite opinion of the alumni upon the proposed plan of combination be obtained by letter ballot.

The sixth matter of interest is the "Circular Letter from Six Members of the Corporation," dated May 14, 1904 (Vol. VI. p. 388), in which no mention is made of any but financial reasons for the "Proposed combination of effort with Harvard University"; and the last is from the Argument—under date of April 25, 1905—of Messrs. Freeman, Draper, and Lowell (the first two being signers of the Circular Letter), in favor of the proposed agreement (Vol. VII., "Alliance Number," Part III. p. 33), in which they say:—

Upon the financial aspect of the matter we do not propose to dwell, because it is fully covered by the report made by the Treasurer, Mr. Wigglesworth, and because we consider the educational question more important.

The Corporation naturally reserved to itself the right to pass upon the financial aspects of the proposed arrangement. For giving a decision on this point the members are fitted by training and occupation, as a recital of the positions held by them would

show. Since, however, they are almost all unfamiliar with educational problems, and since they regarded the alliance with Harvard as fundamentally an educational measure, as the testimony just quoted plainly shows, they very properly referred this “Proposed Agreement” to their own body of educational experts, the Faculty, and to those other parties in interest, the alumni, who, while not expert in matters of education, are, nevertheless, familiar with the Institute system of education, and by their professional experience have given it the only conclusive test.

Upon receiving this invitation of the Corporation, the Faculty, who, at the request of the President, had studiously refrained from taking any earlier action upon the question, seriously discussed and considered the problem, upon its educational side, in a protracted series of meetings, and presented their collective opinion (there being but seven dissenting voices, including that of the President, in a membership of sixty-five) in a temperate and reasoned report. The Executive Committee of the Alumni Association, also, made every exertion to have both sides of the question presented fully and fairly to the alumni, which body deliberately expressed itself as opposed to the proposed agreement. In view of the Corporation’s subsequent vote and the failure of that body to attempt to conciliate the opposing views by suggesting any modification of the proposed agreement or even by stating its reasons for disagreeing with those views, the alumni may properly inquire why they should have been encouraged to believe their opinion to be really wanted. The Faculty may well ask why they should have been put to so much trouble if their judgment, as experienced teachers, upon a question declared to be fundamentally educational, was, after all, to receive so little respect. The Faculty had every moral right, they had every right in equity, not only to be heard, but to be heeded. Moreover, if, as the President declares, “the fame of the Institute rests upon the work and reputation of the alumni,” those alumni should certainly share with the Corporation the right of deciding the future of the school. The President, who in words asserted, and the majority of the Corporation present at the meeting, who by their votes declared that it was justifiable

to disregard the opinion of nine-tenths of the Faculty and of three-fourths of the graduates, could scarcely have realized how extraordinary and grave an exercise of corporate power, far-reaching in its effect upon education, their action involved. In giving no heed to the opinions of the two co-ordinate bodies who have done most to create the reputation of the Institute, the Corporation took the stand that its legal authority justified it in regarding its own judgment as superior to that of men more familiar with the conditions of successful technological education. What is of even greater consequence, this action of theirs imperils all higher education; for, by thus ignoring the solicited opinions of their Faculty, they reduce that body to the level of mere hirelings, and, by contravening the wishes of the alumni, they affront that graduate loyalty which is the vital principle of every efficient college.

The Charter of the Institute created a Corporation of fifty men, including, *ex officiis*, the Governor, the Chief Justice of the Supreme Court, and the Secretary of the Board of Education. With the exception of these three, the body is self-perpetuating, and is responsible only to the Commonwealth. This self-elective body has included many of the most distinguished men of Massachusetts, and of these not a few have given much time and thought to the building up of the Institute and to the management of its funds and property. Many of them, too, have contributed liberally to its funds, and have induced gifts and bequests from others. Nevertheless, no one would for a moment assert that the Corporation has been the chief factor in making the high reputation or in guiding the successful policy of the Institute of Technology. That policy has been shaped almost wholly by the Faculty, whose educational prerogatives have in the past been cordially supported by the President and Corporation of the Institute; that reputation has been given by the teaching of the Faculty and by the professional and personal achievements of the five or six thousand past students. In short, the Institute, like every other college of English origin, has not been in the main the educational creation, and is not the educational property of its legal trustees. On the contrary, it has

been built up by, and should be in the keeping of, three bodies, or “estates”: the Corporation, who guard its financial and legal interests; the Faculty, who determine its educational policy; and the alumni, who, by the success of their professional careers and by their direct efforts, secure for it the support of the community. What the Faculty have done no one familiar with education and applied science needs to be told. What the past students have done professionally is shown by the honorable record in the “Register of Graduates”; what they are ready to do financially is made evident by the William Barton Rogers Fund, the Walker Memorial Fund, and the Technology Fund.

In any rational system of government there should be the closest and most cordial co-operation between these three bodies,—a co-operation that might, perhaps, best be attained through a joint advisory Council of the Corporation and Faculty, with the President as its chairman, and through direct representation of the alumni upon the Corporation and its Executive Committee. In the absence of any provision for such formal co-operation, the legal trustees were under a strong moral obligation to recognize this triple control and responsibility, and to take no final action of importance until a reasonable degree of harmony and agreement as to the step contemplated had been secured. Yet, when there arose the gravest of questions,—one affecting the autonomy and possibly the continued life of the Institute,—they ignored that co-ordinate responsibility and acted in opposition to the expressed wishes of those most vitally concerned. This is an exercise of legal power, as opposed to moral responsibility, momentous in its consequences.

Attempt has been made to excuse the ignoring of the Faculty’s opinion, on the ground that that body is too near the problem to judge it without prejudice; but is the Corporation itself likely to be thought more free from bias when it is considered that at least fourteen out of the twenty-three members who voted for the “Proposed Agreement” are alumni of, or are otherwise closely affiliated with, Harvard University, and that three out of the four conferees who drew up the agreement are officially connected with that

university? Is it maintained that devotion to the Institute blinds the Faculty (nearly half made up of men who are not Technology graduates), while zeal for Harvard does not blind members of the Corporation to the true interests of the Institute and of education?

The alumni vote was disregarded, it has been stated, because it was not more complete. That it was not larger is due, in great part, to the fact that, pressed on the one hand by the need of waiting for the opinion of the Faculty, and, on the other, by the request of the Corporation that the vote be in not later than June 1, the Executive Committee could give the alumni only ten days in which to receive and digest the great mass of argument sent to them, and to get their ballots into the hands of the Committee. Most of the members of the Corporation, however, have long been associated with many large voting bodies and must be fully aware, not only of the difficulty of securing a full vote from a widely scattered body of three thousand busy men, but also of the general experience that the ratio of voting, after the first few hundred ballots come in, remains almost constant, and that, therefore, had every alumnus registered his opinion, the final proportion (three opposed to one in favor of the plan) would have been almost exactly the same.<sup>1</sup>

Taking into consideration, therefore, the three co-ordinate bodies which, in equity if not in law, govern the Institute of Technology, the registered vote upon the "Proposed Agreement" stands, numerically, 1,422 against the plan to 488 in its favor; and the vote by percentages is as follows:—

	<i>Against the Agreement</i>	<i>For the Agreement</i>
Corporation . . . . .	40%	60%
Faculty . . . . .	89%	11%
Graduates . . . . .	75%	25%

<sup>1</sup> Significant in this connection are the votes of the last two classes, who are most intimate with the Institute as it is, and who have been directly under the influence of the alliance discussion. At the time of its graduation, a year ago, the Class of 1904 was overwhelmingly in favor of an alliance. Their recent official vote against the "Proposed Agreement," however, was 116 to 22. No vote was requested from the Class of 1905, but the poll which they took themselves stands in the ratio of 95 to 5 against the proposed alliance.

If the plan is presented to Harvard, therefore, it goes with the indorsement of only one-fourth of the men in those three bodies which have made the Institute what it is and upon which the school must depend for future strength and usefulness. Is it likely, then, that there can be a genuine and hearty “combination of effort” with Harvard University, especially in view of the well-known opposition to the alliance of practically all the Lawrence Scientific School Faculty and alumni, of many, if not most of the academic Faculty of Harvard, and of the close friends, including the chairman of the Trustees, of Mr. McKay? A partnership between Harvard and the Institute to which substantially all the parties in interest consented might be practicable; but one like this, which is repugnant to most of those whose good will and enthusiastic efforts are essential, must inevitably result, if attempt is made to force it through, not only in the wrecking of the Institute, but also in the controlling of education by purely business standards. To use the methods of industrial trusts in conducting colleges and universities is to threaten the present efficiency and ultimately the life of all higher education.

## GENERAL INSTITUTE NEWS

## CORPORATION NOTES

At a regular meeting of the Corporation held June 2, and upon recommendation of the Faculty, the degree of Master of Science was awarded to eighteen candidates and the degree of Bachelor of Science to 244 candidates. This number is considerably larger than that of the class of 1904 which held the record for size.

At the same meeting the following promotions were confirmed:—

Associate Professor Allyne L. Merrill to Professor of Mechanism; Associate Professor Edward F. Miller to Professor of Steam Engineering; Associate Professor Dana P. Bartlett to Professor of Mathematics; Assistant Professor Henry Fay to Associate Professor of Analytical Chemistry; Assistant Professor Charles L. Norton to Associate Professor of Heat Measurements; Instructor George B. Haven to Assistant Professor of Mechanical Engineering; Instructor Harrison W. Smith to Assistant Professor of Electrical Engineering; Instructor Charles-Edward A. Winslow to Assistant Professor of Biology; Instructor William J. Drisko to Assistant Professor of Physics; Instructor Walter S. Leland to Assistant Professor of Naval Architecture; Instructor Carroll W. Doten to Assistant Professor of Economics; Instructor Samuel P. Milliken to Assistant Professor of Organic Chemistry; Assistant Walter H. Adams to Instructor in Mechanical Engineering; Assistant Edward J. Ruxton to Instructor in Mechanical Engineering; Assistant George W. Swett to Instructor in Mechanical Engineering; Assistant Theodore H. Taft to Instructor in Mechanical Engineering; Assistant Robert S. Williams to Instructor in Analytical Chemistry; Assistant Charles H. Porter to Instructor in Electrical Engineering; Assistant Henry W. Buhler to Instructor in Heat Measurements; Assistant Walter J. Gill, Jr., to Instructor in Physics; Assistant Eugene D. Forbes to Instructor in Physics; Assistant Daniel F. Comstock to Instructor in Physics; Assistant Harold A. Everett to Instructor in Naval Architecture; As-



sistant John W. Howard to Instructor in Civil Engineering; Assistant Arthur L. Goodrich to Instructor in Mechanical Drawing and Descriptive Geometry; Assistant Charles W. Sawyer to Instructor in Freehand Drawing.

At a special meeting of the Corporation called June 9 to consider the "Proposed Agreement" with Harvard University, the following votes were passed:—

That the Executive Committee be requested, when they may ascertain that the Institute has power to sell the land on which it now stands, to propose to Harvard University an agreement upon the terms of the tentative plan now before this Corporation.

That the Proposed Agreement be so amended as to read: "This agreement shall not go into effect until and unless the Massachusetts Institute of Technology shall have applied to the Supreme Judicial Court for instructions, and the court shall have made a decree that this agreement may be carried out without violation of its duties as a trustee and in accordance with law and equity."

The Executive Committee has voted that Instructors shall be appointed for a term of two years.

#### FELLOWSHIPS AND PRIZES

The following fellowships and prizes have been announced:—

D. F. Comstock, '04, has been awarded a Savage Fellowship for study abroad.

G. B. Ford, '00, continues his third year of study in Paris as a Savage Fellow.

H. T. Kalmus, '04, has been awarded an Austin Fellowship for study abroad.

M. A. Stewart, Fellow in the Department of Chemistry, has been awarded an Austin Fellowship.

R. C. Tolman, '03, has been awarded an Austin Fellowship for study abroad.

M. H. Whitcomb, '03, has been appointed Dalton Fellow.

R. S. Williams, '02, has been awarded an Austin Fellowship for study abroad.

A. W. Rowe, '01, A. H. Jacobs, '04, E. A. Miller, Instructor in Mathematics at the Institute, and C. H. Mathison, Fellow of the Institute, have been awarded graduate scholarships for study abroad during the coming year.

The Rotch Prize for excellence of a graduate in architecture has been awarded to Miss I. A. Ryan: that for a special student has been divided between W. H. Crowell and M. H. Whitehouse.

#### REVISION OF PROGRAMS

The revised course programs which were made necessary by the omission of modern languages from the work of the third year will go into effect next fall. By thus moving ahead the modern languages, one hundred and thirty-five hours are gained per term. This time will be used for additional professional studies, for professional studies formerly taken in the fourth year, and in part for options in other departments. In Course II., for example, there will be added courses in Precision of Measurements, Electrical Engineering, and Electrical Engineering Laboratory.

The following, which is a copy of a circular sent to all second-year students, will explain the options in general studies:—

#### OPTIONS IN GENERAL STUDIES

All regular students in the third year are required, both in the first and in the second term, to devote a specified amount of time to General Studies. The choice of subjects is to be made from the following list of options:—

##### FIRST TERM

Economic History (191).

##### SECOND TERM

##### *Economics*

Railroad Economics (194).  
Banking and Finance (195).  
Labor Problems (196).  
Organization of Industry (197).

##### *English*

Advanced English Composition (143). Contemporary Literature (158).  
English Literature of the Eighteenth Century (156). English Literature of the Nineteenth Century (157).

## FIRST TERM

## SECOND TERM

*History*

Comparative National Government  
(209).

International Law (201).

History of Science (761).

Municipal Government (208).

Colonial Systems (175).

European Civilization and Art (182).

*Modern Languages*

French III. (222).

German III. (232).

French Sight Reading (228).

German Sight Reading (238).

Spanish (240).

French III. and French Sight Read-  
ing (222, 228).

German III. and German Sight  
Reading (232, 238).

Spanish (240).

The numbers immediately following the subjects refer to their numbers in the list of subjects printed in the Catalogue and the Programme.

Students are allowed to exercise entire freedom of choice among these subjects, except that History of Science is not counted as an option in Course VIII. nor European Civilization and Art in Course IV.

Students will be expected to choose their option for the following term in May and in December. Subject to the approval of the heads of their Departments, fourth-year students will also be admitted to these general options without requirement as to examinations.

The time assigned to these General Studies in the first term is forty-five hours, in the second term seventy-five hours.

## COURSE XII.

At a meeting of the Faculty on May 3 it was voted to change the schedule in Course XII., so as to make that course in the future include both Geology and Geodesy. By this plan it will be possible for a student to graduate in four years after specializing in Geodetic work. For three years past there has been no Geodetic option in Course I. The new Course aims to prepare students for professional work in Geology or Topography after a thorough training in Mathematics, Drawing, Physics, and Surveying. The plan of the course admits of specialization, in the fourth year, in Geodetic, Geologic, Mineralogic, Physiographic, or Palæontologic studies, according to the professional aim of the student.

## ENTRANCE EXAMINATIONS

As compared with last year, the number of entrance candidates is somewhat larger. In 1904 there was a total of 680, and this year the total is 696. These totals were made up of those candidates who took complete and partial examinations, 192; finals, 225; preliminaries, 263; in 1904; and complete and partial, 171; finals, 233; preliminaries, 292; in 1905. The gain in the totals is made up in the number of those who have taken preliminary examinations this year. Candidates who will affect the incoming class are those who took the complete, partial, and final examinations. Hence the entering class this year is likely to be the same as that of last year, there being but thirteen fewer candidates than took these examinations then.

This is the first year that all entering candidates have been required to take entrance examinations in physics. Last year the examination was held for those who purposed entering this coming September. Physics is now cancelled from the list of elective subjects; but, by the addition of biology, the list still comprises eight subjects, from which a choice of one has to be made.

## SUMMER SCHOOL

A party of between fifteen and twenty students and instructors of the Civil Engineering Department, composing the Summer School of Topographic, Geodetic, and Hydraulic Surveying, left the first week in June for East Machias, Me., where the school was held this year.

The work consisted of an extension of the topographic survey commenced two years ago, field practice in triangulation, and base line measurement, the gauging of the East Machias River, and the determination of mean sea level by tidal observation.

The party returned to Boston about July 1.

## GENERAL NOTES

At the annual meeting of the Faculty held on May 3, 1905, Professors Tyler and Burton were re-elected Secretary and Dean, respectively.

A valuable collection of 207 volumes from the library of the late Thomas Gaffield has recently been given to the Institute by Mrs. Gaffield. The gift includes books on glass and glass-making, ceramics, decorative art, chemistry, physics, microscopy, and mineralogy, besides many photographs. Mr. Gaffield was a life member of the Society of Arts, and was a member of the Corporation of the Institute from 1896 to the time of his death in 1900. This collection supplements an equally fine one given to the Institute by Mr. Gaffield some years ago and set apart in the Chemical Department as the "Gaffield Library."

Technology has sent to the Portland (Ore.) Fair practically the same exhibit that won six prizes at the St. Louis Fair last year. The exhibit will be placed in a prominent position on the large landing of the main staircase of the Massachusetts State Building.

The Institute was represented at the inauguration of the President of the University of Louisiana by Mr. B. A. Oxnard, '75. Professor Lanza represented the Institute at the inauguration of the President of the University of Virginia.

Professor Arthur A. Noyes was elected a member of the National Academy of Sciences at the meeting in Washington, held April 18-20, 1905.

Professor Alfred E. Burton has received a year's leave of absence, the major portion of which will be devoted to examining the method of teaching descriptive geometry in France, and completing a textbook on the subject. Arrangement has been made for Professor Merrill to take a portion of the consultation work of the Dean.

Dean Burton, who is a graduate of Bowdoin of the Class of 1878, was recently elected an overseer of Bowdoin College.

Prof. Doten attended the International Railway Congress which met in Washington May 3-15. This was the seventh session of the Congress, and the first to be held in America. Delegates repre-

senting the railroads and governments of practically every civilized country in the world were in attendance.

Professor Chandler has received an open letter from Mr. C. H. Blackall, secretary for the Rotch Travelling Scholarship, announcing that hereafter a graduate of the Architectural Department of the Institute, wishing to compete, will be excused from the preliminary examinations on presentation of his degree.

Plans are being made to erect a memorial to the late President Thomas M. Drown, of Lehigh University. It will take the form of a club-house for the faculty and students, and will be erected at a cost of \$80,000.

At the first meeting of the New England Section of the Society of Chemical Industry, recently organized, the following officers were elected: chairman, Henry Howard, M. I. T. '89, of the Merrimac Chemical Company; treasurer, Godfrey Cabot, manufacturing chemist; secretary, Dr. W. H. Walker, of the Institute.

The first class to receive certificates from the Lowell School for Industrial Foremen, of which Professor C. F. Park, '75, is the Director, numbered twenty-eight.

The monthly dinner of the Instructors' Club was held at Tech Union on April 12. Mr. George W. Rolfe, Instructor in Sugar Analysis, spoke to the members about "Life on a Porto Rican Sugar Plantation."

#### DEPARTMENT NOTES

##### CIVIL ENGINEERING

The applications for graduates for this year far outnumber the number of available men, although the class is the largest ever graduated from this department. Forty-six men have been granted the degree in Course I., and five in Course XI. The largest previous number graduated in Course I. was thirty-seven in 1901.

Some of the men, it is true, have not yet obtained positions, as it is difficult for many of them to make up their minds, and opportunities are sometimes lost because the right men are not immediately available.

Professor C. M. Spofford has resigned his position at the Institute

to accept the post of Professor of Civil Engineering at the Brooklyn Polytechnic Institute. His loss will be regretted by all who have had occasion to come in contact with him; but both he and the Institute are to be congratulated that he leaves to assume a more responsible and more lucrative position.

Messrs. Ayer, Barlow, McManus, Humphrey, and Whitman of the class of 1905 will return to the Institute next year as Assistants in the Department of Civil Engineering. Of the men who have served as Assistants for the present year, five have resigned to accept positions outside; namely, Messrs. Blum, Hartshorne, Holbrook, Stetson, and Thurlow.

Messrs. Holbrook and Thurlow are already engaged on the new filtration works at Pittsburg, Pa. Mr. Stetson will go to the same city to take a position on the Pennsylvania lines west of Pittsburg. Mr. Hartshorne is in the employ of the Street Railway Company, and Mr. Blum goes to Chicago to take a position on the work of abolishing grade crossings there.

#### MECHANICAL ENGINEERING

The addition of one year of Language to the requirements for entrance to the Institute, together with a shortening of the time devoted to Descriptive Geometry, has rendered possible the following improvements in the course in Mechanical Engineering, which have been made:—

1. The number of exercises in Differential Equations has been increased from ten to thirty.
2. A course in Precision of Measurements has been added.
3. The number of hours devoted to Electrical Engineering subjects has been increased from 60 to 150.
4. The number of exercises in Foundations has been increased from 10 to 15.
5. An addition of thirty hours has been made in the time devoted to each of the Options.
6. An addition of one hundred and twenty hours has been made in the time devoted to Literary subjects.

There were graduated this year, in the course in Mechanical Engineering, 54 students, thus making the total number of graduates in this department 742.

The investigations upon reinforced beams and columns have conducted to a considerable advance in our knowledge of the behavior of such material; and in several other investigations material advance has been made.

#### MINING AND METALLURGY

A matter of considerable interest has come to the department in the Western black sands, which are to be investigated for their platinum contents, as well as for other useful metals and minerals: iridium, osmium, monagite, zircon, garnet, topaz, etc. For this purpose a classifier yielding most minute differences in settling power has been devised. The greased plates will be used for separating minerals by adhesion. Magnets of different strengths will be employed to separate minerals according to their respective degree of magnetic power. Heavy solutions with very slight differences in specific gravity will be used for separating the minerals into groups varying by small differences in specific gravity. And, finally, the microscope and, if necessary, chemical analysis will determine the species.

#### ARCHITECTURE

The year has been an unusually successful one for Course IV.

The exhibition of theses shows a quality of work that has never before been equalled, and shows besides how fine is the influence on the whole school of the graduate courses.

The fifth and sixth year men had for their thesis to design a cathedral, and the main exhibition room devoted to the display of these designs shows a remarkable quality of work. It shows how little the Beaux-Arts principles influence the decision of style, and besides how important is the application of those principles in designing in any style that may appeal to the architect. Gothic, Romanesque, Italian, Renaissance, and Classical designs are here seen, and these various styles are handled with a high appreciation of what they stand for.



The majority of a good graduating class is to be represented next year in the advanced courses, which, with other inducements, offers for the first time a travelling scholarship. The department has just received from a friend the very generous gift of \$1,200 for this purpose. It is to be awarded solely on the basis of distinguished merit, as it was felt that the prize would thus possess a greater value for the advancement of architecture than if restricted to benefit only the regular or the needy student. The competition will be for Technology students, but they must be regularly entered in the course of advanced design. The prize will be awarded at the end of the school year in 1906. The last part of the term will be devoted to competitive work, to which will be admitted the accepted candidates. The winner of the prize will be expected to start for Europe before September 1, and must remain abroad a complete year unless otherwise authorized. The particulars of the course of travel and study proposed are matters which have not yet been fully decided.

A scholarship offered under such liberal conditions ought to give most gratifying results. Open to talent, with the single restriction that the candidate must equal the standard in design of the advanced classes of the Department of Architecture, such an opportunity ought to make a broad appeal.

The annual dinner of the Boston Society of Architects recently took place in the rooms of the department. This is always a pleasant occasion. It is held at the time when the society awards its two prizes, generously given each year to members of the Senior Class for the best design of a special problem, decided by a jury from the society. An additional interest was attached to this occasion when the award was announced of the Rotch Travelling Scholarship to Mr. W. D. Crowell, who has received his entire academic training at the Institute. Two of his competitors were Beaux-Arts men, who came from Paris expressly to compete for this splendid prize.

The Senior Class of the department and the competitors for the Rotch Scholarship were guests of the Boston society. Eighty-five in all sat down to dinner. After full justice had been done to the good cheer offered, the rooms of the department were visited

and the work of the students examined. This active sympathy of practising architects in the welfare of the school is most stimulating. It is highly appreciated by instructor and student alike. A Special Committee on Education has lately been appointed by the society, and we are looking forward to still closer interests which should help make for a constantly improving standard in the architectural profession.

#### ELECTRICAL ENGINEERING

Harrison W. Smith has been promoted to become Assistant Professor of Electrical Engineering. He graduated from Harvard University in 1895, and from the Institute in Mechanical Engineering in 1897. He has been with the Institute since graduation, being made Instructor in 1901.

Charles H. Porter has been made Instructor in Electrical Engineering. He is a graduate of Brown University in 1900, and of the Institute in 1903. Since graduation he has spent one year with the Chase-Shawmut Company.

The Standardizing Laboratory has been relied on to establish the work of inspection of electric meters throughout the State of Massachusetts.

The Assistants already appointed for this coming year are: Harold G. Crane, John C. Damon, George I. Rhodes, all three being graduates of the department in 1905; Henry A. Wentworth, a graduate of the Department of Electro-Chemistry in 1905; and G. A. Rodenbaeck, a graduate in 1905 of the Electrical Engineering Department, University of Wisconsin. None of the present corps of Assistants will return. An attempt was made to secure Assistants from various of the engineering colleges of the country; but a large demand for technical graduates this year, coupled with the small remuneration which attaches to the position of Assistant, rendered the attempt generally unsuccessful.

Professor Puffer has been appointed Superintendent of the Department of Applied Electricity of the Evening Polytechnic School of the Boston Young Men's Christian Association.

Professor Clifford served as a member of the Committee on Re-

lations with Kindred Organizations of the National Electric Light Association. This committee submitted its report at the recent annual convention of the Association held at Denver.

The demand for this year's graduates in the department has been unusually large, particularly from the telephone and manufacturing companies throughout the country. There has also been a considerable number of applications for graduates to fill teaching positions in the departments of electrical engineering in several of the technical colleges of the United States.

The opportunities for summer work for undergraduates in the department have also been good. Such work serves a twofold purpose in enabling men to earn something during a part of the vacation period, while at the same time giving them experience of value in their professional work.

Several of the younger engineers have offered themselves as candidates for the School of Engineering Research, to work in this department; but the Council of the School has as yet accepted none of them.

The firm of Stone & Webster has decided to discontinue its testing laboratory, and has presented to the department a considerable amount of useful electrical material, including a standard Weston voltmeter, small storage cells, various galvanometers, standard condensers, switches, and the like, all of which will prove of value in the regular laboratory work.

The General Electric Company and the National Electric Company have given to the department a number of large photographs of the apparatus manufactured by them. These photographs have been placed in the library.

The Harrison Lamp Works of the General Electric Company has presented to the department a cabinet showing the various stages of manufacture of the Edison incandescent lamp.

The Lord Electric Company of Boston has given a panel on which are mounted the various styles of Thomas Soldered Rail Bond.

In the investigation of enclosed fuses, which has been going on in the department during the past year, the Chase-Shawmut Com-

pany, D. & W. Company, and General Electric Company have aided in contributing fuses of various sizes for the carrying on of the work.

Professor Puffer, in conjunction with Dr. Louis Bell, has published a paper in a recent number of the *Electrical World and Engineer*, giving results of certain photometric and life tests on the new tantalum lamp. The work was carried on in the laboratories of the department.

C. P. Tolman, VI., 1902, chief engineer of the National Electric Company, lectured before the Senior students on Thursday morning, March 16, on the subject of "Brakes and Braking." He spoke of the development of the power brake, emphasizing its importance, not only from the standpoint of safety, but also from that of economy in operation due to the higher schedule speeds made possible by its use. Mr. Tolman has carried on a systematic investigation of this whole question, and some of the results of this work were given in the lecture.

On Wednesday, March 29, P. W. Davis, engineer of the Electric Storage Battery Company, discussed the use of the battery for light and power work. The lecture was illustrated with diagrams and lantern slides, presenting very clearly the conditions proper to the use of such secondary sources of electrical energy.

At the General Electric dinner held at the Hotel Brunswick on Friday, March 31, Professor Clifford was one of the speakers called on to discuss the topic, "The Power of the Future."

The plan of having engineers not connected with the department give lectures on subjects with which they are especially familiar has been continued this present year. In this connection Dr. F. A. C. Perrine, a consulting engineer of New York City and formerly vice-president of the Stanley Electric Manufacturing Company, gave four lectures on "Power Transmission" during the third week of April. He devoted himself more particularly to the hydraulic and economic rather than the electrical aspects of the question, supplementing the regular instruction given in the department.

Colonel Larned, Colonel Echols, and Captain Coe, of the United

States Military Academy at West Point, visited the laboratories on Friday, April 7. There is a possibility of some of the graduates of West Point coming to the Institute for post-graduate work, a part of which will be carried on in this department.

On April 24, Charles Garrison, VI., 1891, New England representative of the DeLaval Company, gave a lecture on "Steam Turbines" to the Seniors, devoting himself more particularly to the DeLaval turbine. His lecture was illustrated by a working model of one-kilowatt capacity, so that the various features of the construction could be seen and examined by the students.

Professor Laws visited the Bureau of Standards at Washington during Junior Week, and also saw some of the manufacturers of electrical instruments in Philadelphia. He brought back much of interest and value in connection with the work of the Standardizing Laboratory.

The question of prices in distinction to costs was discussed by Mr. R. S. Hale, of the Edison Electric Illuminating Company of Boston, before the Senior students on the morning of Wednesday, April 26. Mr. Hale spoke in some detail of the rates made by the Edison Company, giving a very clear discussion of the reasons for their present system.

A. F. Nesbit, VI., 1895, Professor of Electrical Engineering at the New Hampshire College, recently made his annual visit with his electrical engineering students, to inspect the Augustus Lowell Laboratories.

#### CHEMISTRY AND CHEMICAL ENGINEERING

The changes in the course schedules of Chemistry and Chemical Engineering, adopted by the Faculty near the close of the term, are of unusual importance and extent. It has been felt for some time by members of the department that changes in the course in Chemical Engineering were necessary to adapt the instruction to the constant and increasing demand for men who can properly serve as chemical engineers, as that profession is now shaping itself. More experience and training along chemical lines is now demanded than was the case when the course was established, and the partial re-

modelling of the course made necessary by the increase of modern language requirements for entrance to the Institute (whereby all regular instruction in French and German ceases with the second year) rendered this an especially opportune time to introduce the more radical alterations.

Somewhat similar conditions obtained in connection with the option of the course in Chemistry which contains the mechanical engineering subjects. The time devoted to these subjects was less than was desirable, and an effort was first made to extend this time, retaining the option, and at the same time to increase the allotment of time to chemical subjects for the students of Chemical Engineering. It was soon evident that the two schedules closely approached the same point, and that the maintenance of two courses, differing so little from each other, was undesirable. The outcome has been the abolition of the "mechanical option" of Course V. and the revision of Course X. in such a way as to make it a course of Chemistry, with the retention of the fundamental subjects in mechanical engineering. The chemical subjects comprise also all the fundamental work of the chemical course, and it is believed that the revised course will offer an excellent training for students intending to enter technical work with prospects of advancement to responsible positions in the management and conduct of manufacturing establishments. The new schedule is published in the program recently issued. The second year only of this course becomes effective next year.

It was also thought best to withdraw the metallurgical option (Option 4) of Course V., beginning with the second year. Further changes in this course will become operative in 1906-07, which will affect the instruction in Industrial Chemistry, Organic Chemistry, and Theoretical Chemistry, and will bring them into line with the courses provided for in the new Course X.

The Chemical Department has received an excellent collection of specimens of calcium carbide from the Union Carbide Company, and of carborundum in the form of crystals, wheels, hones, bricks, etc., from the Carborundum Company. The department has recently purchased a Shaw's Gas Testing Machine for the determina-

tion of the amount of fire-damp in mines. By means of this apparatus the determinations can be carried to an accuracy of 0.1 per cent., and can be made at intervals of two minutes, whereas formerly the determinations required nearly an hour.

Both Professor Noyes and the Institute are to be congratulated upon his election to membership in the National Academy of Sciences. It is a well-deserved recognition of his professional standing and attainments. Professor Noyes is at present the second member of the Academy from the Institute, Professor Crafts having been a member for some years. President Rogers was formerly an honored member and President of this select body of scientists.

Professor Walker has gone abroad to inspect chemical processes in Sweden and in England in the interests of some of his Boston clients. He expects to return about the middle of July.

Two of the theses completed in the laboratory of Industrial Chemistry during the past term under Dr. Walker's direction have an important bearing upon industrial problems of the day. The first is that completed by Messrs. E. C. Smith and E. W. Wiggins, on "The Products of the Distillation of Pine Wood," in the course of which it was shown that both turpentine and rosin were obtainable in profitable amounts from the refuse pine stumps which have formerly been discarded. The second was that of J. L. Merrill, on "A Sodium Bisulphite Pulp Process and the Recovery of the Wasteliquors," which throws some light on the difficult question of a more satisfactory method for the disposition of the waste materials from the treatment of wood in the manufacture of pulp by the bisulphite process.

Mrs. Richards has just issued a book on the "Cost of Shelter," which is a companion volume to her "Cost of Living." Professor and Mrs. Richards have recently built a bungalow at Randolph, N.H., on a spot giving them a magnificent view of King's Ravine.

Professor Gill is publishing a series of articles on Engine-room Chemistry in *Power*. These articles deal with the analysis of the gases, oils, and boiler scales, and the applications of the results to some of the problems that a stationary engineer has to meet.

Mr. G. W. Rolfe has recently completed the reading of the proof-

sheets of his book on *Methods of Optical Analysis*, and Professor Thorp has just received from the publishers the new and enlarged edition of his "*Outlines of Industrial Chemistry*."

Mr. A. G. Woodman has given during the past term a new course in *Advanced Food Analysis*, which has attracted a number of earnest workers. The course includes laboratory and class-room exercises upon problems connected with State and municipal food control and the systems of food inspection, as well as a critical study of methods of analysis. In connection with this course two lectures—open to all students in Chemistry—were given by Mr. Albert E. Leach, chemist to the State Board of Health of Massachusetts.

Professor Talbot has again been appointed chief examiner in Chemistry for the College Entrance Examination Board to prepare the examination paper of 1906. He is also a member of the advisory board of the evening school of chemistry, conducted under the auspices of the Boston Young Men's Christian Association.

Of the Assistants of the past year, Mr. R. S. Williams leaves the Institute to spend some time in study abroad, probably at Göttingen. Mr. R. C. Tolman resigns from his position as Assistant to take up post-graduate study in Chemistry at the Institute. Mr. John R. Odell, Dr. R. W. Moore, Mr. E. W. White, and Mr. F. C. Ware leave the Institute to enter technical positions.

The new appointees are Messrs. E. A. Barrier, R. S. Gifford, and A. L. Smith as Assistants in Analytical Chemistry, Mr. W. K. Lewis as Assistant in Industrial Chemistry, Mr. H. L. Jackson as Assistant in Technical Analysis (all of 1905), and Mr. F. J. Quinlan, of the Worcester Polytechnic Institute, Assistant in Inorganic Chemistry.

Of the twenty-three graduates in Chemistry eighteen had secured employment before graduation, and this is also true of eight of the thirteen graduates in Chemical Engineering. Of the remaining men from both courses nearly all now have positions.

#### ENGLISH

The English Department has been trying an experiment with the Freshman Class by a two weeks' drill in the use of books of refer-



ence. The machinery of this drill need not be given in detail, and it is sufficient to say that the effort has been to make the students actually use as many reference books as possible, and to call their attention to all the others in the library. Some of the results have been amusing, as when one student announced that the proper place to look for an account of the Gnostics would be "Who's Who," and a number of others reported from Bartlett's "Familiar Quotations" that several famous quotations came from "Ibid." On the whole, however, the experiment seems to have been a success, and to be of sufficient value to be repeated.

#### MECHANIC ARTS

In October, 1883, the Mechanical Laboratories were removed from a small one-story structure on the southerly side of Rogers Building to the present location on Garrison Street. The floor space and equipment were then very much increased, the capacity of the several departments being as follows: carpentry, forty; wood-turning and pattern work, thirty-six; foundry work, forging, and clipping and filing, thirty-two; and machine-tool work, twenty-two students. In 1886 the capacity of the last-mentioned department was increased to twenty-three by the addition of one engine lathe. This equipment, with slight additions of general tools, has proved adequate up to the present time, except in the Machine-tool Laboratory, where in November, 1903, seven new engine lathes and a centring machine were supplied, and two old engine lathes were replaced by new and modern machines, thus making it possible to accommodate classes of thirty students. To make room for the additional lathes, the Filing Laboratory was transferred to a room on the second floor, and arranged, as formerly, to accommodate thirty-two students, a double tool grinder being provided for sharpening chisels. In 1904 one engine lathe and one planer were added to the machine-tool equipment.

With the possible exception of the Machine-tool Laboratory, where two or three more engine lathes and a few general machine tools might well be added to increase the possible number of stu-

dents in the classes to thirty-two, it is believed that the numbers receiving instruction at one time are as large as they should be for successful and efficient work.

Since 1883 the instructing staff has increased from three Instructors and three Assistants to four Instructors and five Assistants.

In 1898 summer schools were begun in the several departments, and have been continued with success each succeeding year. The total number attending this year is thirty-nine. The maximum number attending was fifty-five in 1902. The classes in machine-tool work have always been large, many Senior students availing themselves of this opportunity of anticipating their mechanic arts work in order to devote more time to thesis or advanced work. This anticipation of Senior work has made it possible until recently to accommodate all applicants for machine-tool work. At present, however, so many students come prepared in wood-work and forging that the numbers in machine-tool work are relatively increasing.

In 1904 a band saw was added to the equipment of the Wood-working Laboratory. The equipments of the several departments have been kept up to date as far as the funds available would permit, and all are now in good working order. Some of the tools, however, while still serviceable, are not up to date, and it is to be regretted that the present straitened condition of the finances of the Institute makes an appropriation for new equipment at this time impossible.

An appropriation has just been made for instruction amphitheatres in the Wood-working, Filing, and Forging Laboratories, and these much-needed conveniences will be constructed during the summer.

Among the desired changes and additions to equipment, were funds available, are the following:—

*Wood-working Laboratory.*—As carpentry and wood-turning are now taught in many of the preparatory schools, it is believed wise so to plan the exercises and arrange the equipment that more advanced work, mainly pattern-making, may be taught. To this end there should be added six large lathes, one pattern-maker's saw bench,

one tool grinder, one surfacing machine, and several small special tools. Much better results might also be obtained, were each student supplied with a set of the principal edge tools, which he alone uses and keeps in order,—a plan long successfully used in the Filing Laboratory, but not adopted here on account of the expense.

*Founding Laboratory.*—It is believed that instruction in foundry work should be given to every student in Mechanical Engineering, because of the value of a thorough knowledge of this important subject in many industrial works to-day. To properly develop this work, a new iron melting plant is needed, and a special instructor should also be engaged.

*Forging Laboratory.*—The equipment has been kept in good working order, but renewal at this time is inadvisable on account of the probable early removal of the Mechanical Laboratories from their present location, such a change necessarily requiring new blast and smoke pipes of relatively large proportional cost.

*Machine-tool Laboratory.*—To maintain the present high standard of work, fourteen of the engine lathes and one planer purchased in 1876 should be replaced by modern tools. More general tools are also needed to successfully carry on the work with present large classes, among which may be mentioned a small radial drill, a universal grinding machine, a universal milling machine, a shaper, and a new tool grinder. This laboratory might well be equipped with a few heavy machine-tools, on which the cutting power of high-speed tool-steels might be studied, and also with some special machines on which high-class work can be done. Such an equipment would serve the double purpose of illustration and opportunity for thesis investigations. It would also enable advanced work to be carried on, which it is believed would be of great advantage.

## THE UNDERGRADUATES

## JUNIOR WEEK

Every year the social side of Technology life becomes more complex, and the various social functions better done. The Junior Week of the class of 1906 showed this very plainly. By Faculty action the "week" was concentrated into three days, and this fact added greatly to the success attained. The events were close together, and the excitement never flagged from the spring concert of the musical clubs to the Saturday night performance of the show at Malden.

The annual spring concert was held in the New Century Building on Wednesday, April 26. The matrons were Mrs. Lanza, Mrs. Allen, Mrs. McKibben, and Mrs. Rand. In spite of the unpleasant weather a large audience greeted the clubs, and thoroughly enjoyed the excellent music. After the concert there was a dance, which was so popular that it was difficult, if not dangerous, to move around the hall.

On Thursday the *Technique* rush took place at noon in the open space back of the Museum of Fine Arts. Long before noon every window in the Engineering Buildings was filled with Tech men and their fair friends, who evidently appreciated seeing this characteristic bit of Tech life. The rush was quite up to the standard, and serious accidents seemed inevitable; but there was a cheerful spirit of give and take, and no serious damages were reported. Thursday afternoon, at two, the first public performance of "The Chemical Maid" was given at the Hollis Street Theatre. The show seemed to satisfy the audience, which completely filled the theatre. "The Chemical Maid" in itself is not the most remarkable show ever written by Tech men, but the work of the cast was all that could be desired. Davis, '05, as has been true of the last three productions, was responsible very largely for the success achieved; but the work

of Bancroft, '07, Vonnegut, '08, Morris, '06, and Henderson, '06, was more than creditable. The following men were responsible for the production:—

## MANAGEMENT

Philip Edward Hinkley, '05, general manager; Raymond W. Parlin, '07, business manager; Frank Sidney Hamilton, '07, Joseph Damon Whittemore, '07, assistant business managers; Ralph G. Kann, '07, stage manager; Alexander Macomber, '07, James McGowan, Jr., '08, assistant stage managers; Erle Francis Whitney, '07, press representative.

Music by Ralph Barton Sanders, '07, Herbert Mygatt Wilcox, '05, Harry Lawrence Moody, '07, Emerson Hurd Packard, '07, Charles Francis Willis, '06, Charles Wolston Coffin, '07, Louis John Killion, '05.

## CAST

Maud, The Chemical Maid . . . . .	A. F. BANCROFT, '07
Jack Tar, Of the good ship Spy . . . . .	R. DAVIS, '05
Dick Allen, Owner of the Spy . . . . .	C. H. LOUTREL, '07
Polly, A simple Miss . . . . .	J. DANIELS, '05
Tom, Polly's Lover . . . . .	R. B. SANDERS, '07
Lieut. Carly, U.S. S. Chicago . . . . .	A. ELLIS, '08
Sir Explode, Professor of Chemistry at the University,	G. M. HENDERSON, '06
Mrs. Explode, His loving Wife . . . . .	J. B. SANDO, '08
Heinie, Inn-keeper . . . . .	K. VONNEGUT, '08
Bailiff, Of Festalburg . . . . .	J. E. GRIFFIN, '06
Mamie, A Barmaid . . . . .	J. M. MORRIS, '06
Jack Straw, A chemical residue . . . . .	W. A. ADAMS, '08

Students: NICHOLS, SARGENT, BOYNTON, CLARK, CARTER, LUFKIN, LAMBIRTH, HOWE, STANTON, REMON.

Seminary Girls: CROSBY, COLLINS, DICKINSON, Jr., HASTINGS, KEELER, LEES, MOORE, SHIELDS, TRAUERMAN, VERY.

Solo Dancers: BUTTS, LYNCH.

## CHORUS AND BALLET

Sailors: HEILMAN, HOLT, COFFIN, ALLEN, RAND, GIMSON.

Sailor Girls: AMES, DAVENPORT, FLAHERTY, CAMPBELL, LOCKE, SCHMIDT.

Tourists—Men: CALDWELL, COLE, Jr., GOODNOW, DRAPER.

Tourists—Girls: WHITMORE, BROWN, JR., ALLEN, SPEAR.

Bailiff's Posse: MORRISON, SOULE, LONGLEY, MOORE, SCHIRMER, WONSON.

Barmaids: WALLACE, TOWLE, RIEFKOHL.

Dutch Girls: CLARK, ALLEN, COFFIN, KENISTON, LUTHER, WHITMARSH.

Dutch Men: BURLEIGH, SEAVER, CHASE, GARRATT, NIX, TOWLE.

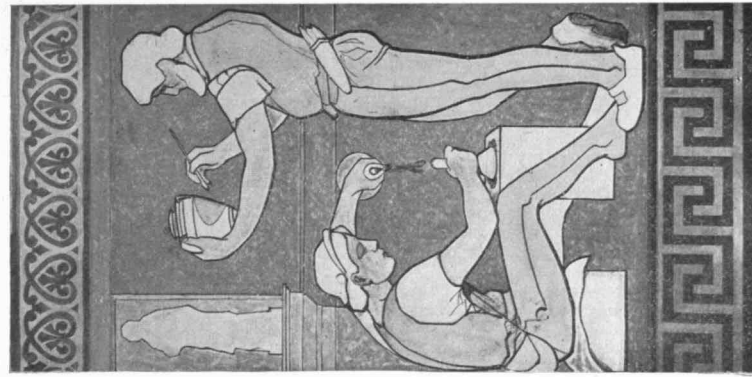
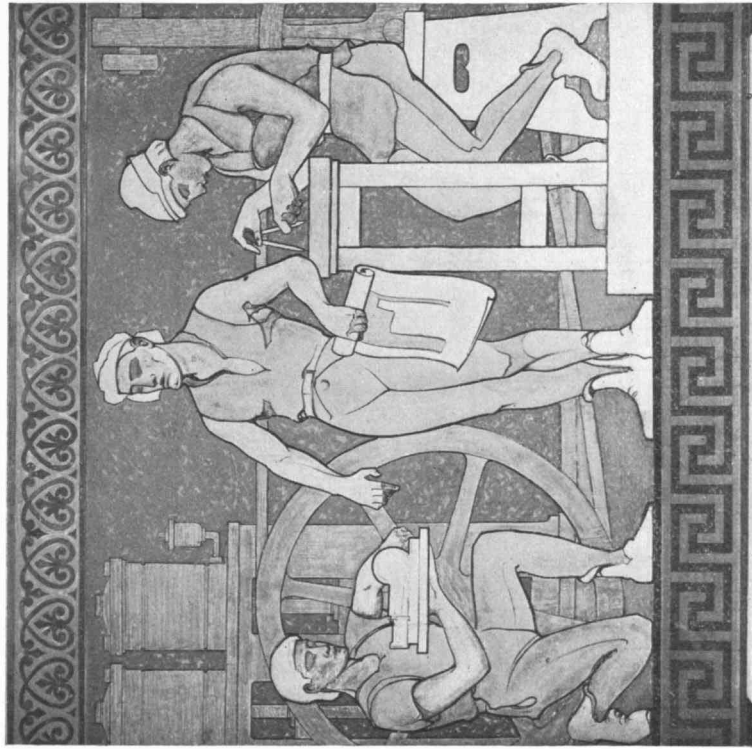
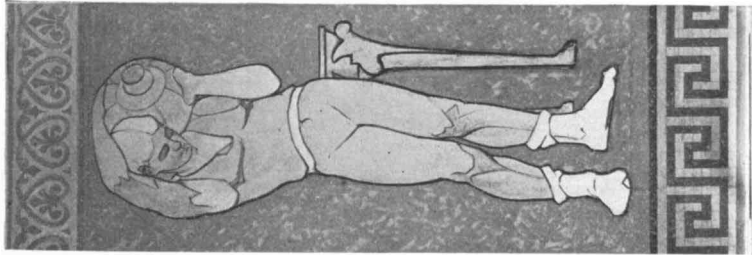
Daisies and Bees: ARNOLD, BARRETT, COOK, JACCARD, PUTNAM, SHAP-  
LEIGH.

Thursday evening the Junior Prom was held at the Somerset. This Prom was by far the largest, most brilliant, and in every way the most successful ever given at Tech. The large ball-room was more than comfortably filled, and the program included forty dances and extras. The matrons were Mrs. George Knapp, of Chicago; Mrs. Joseph T. Lawton, of Baltimore; Mrs. George F. Swain and Mrs. George V. Wendell, both of Boston. The Prom Committee consisted of William J. Knapp, chairman, A. A. Blodgett, J. T. Lawton, Jr., S. C. Coey, H. L. Williams, and L. F. Mesmer.

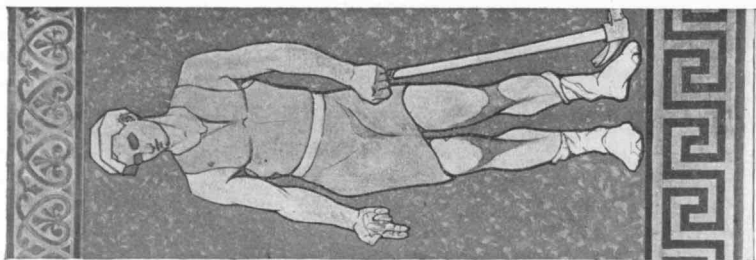
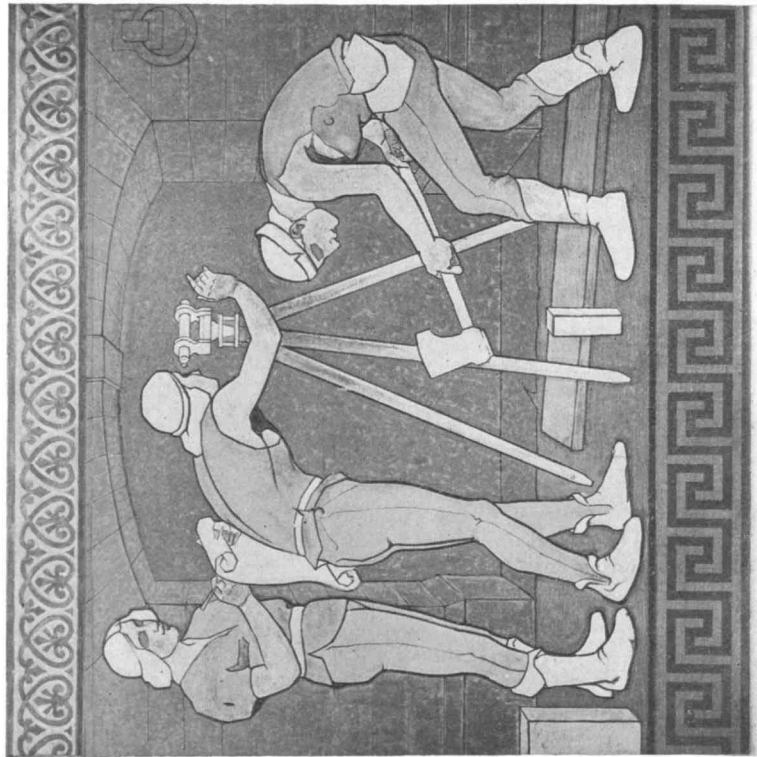
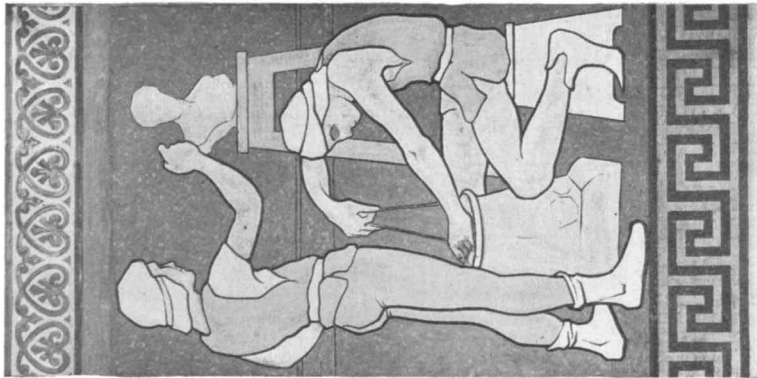
Friday afternoon the second performance of the show took place, and the theatre was again filled with enthusiastic friends. Saturday night the last performance of "The Chemical Maid" was given in the Malden Auditorium. A very appreciative audience saw the best performance of the three. The size of the audience was most encouraging.

## GRADUATION EXERCISES

For 1905 the graduation exercises began with the Senior Dinner held at the Westminster, Thursday, June 1. It was hoped that this dinner would remove some of the more unpleasant features of "Degree Night," and was so successful that it is to be hoped it will become a permanent feature of Commencement. The dinner was



East Section of the Frieze presented by Class of 1905.



West Section of the Frieze presented by Class of 1905.



interrupted by Professor Merrill and Mr. Humphreys, who distributed the graduation notices. After this there was a marked improvement in the spirits of most of those present. The dinner was notable for the fine speeches from gentlemen of the Faculty and the Corporation, who very kindly gave up their time to making the dinner a success. The speakers were President Pritchett, Dean Burton, Mr. Samuel Cabot, Professor Clifford, Professor Spofford, Mr. Blachstein, and Professor Winslow. Letters of regret and good wishes were read from Dr. Williams, Mr. Stone, and Mr. Rand. L. T. Bushnell was toast-master. Friday night, at the alumni reception in the Engineering Buildings, 1905 was welcomed with informal formality into the Tech brotherhood. Colonel Locke, Professor Barton, Professor Robbins, and Dean Burton spoke, and J. F. Beal, '75, I. W. Litchfield, '85, and E. L. Hurd, '95, presented the class of 1905 with various symbolical tokens of good will. 1905, not to be outdone, gave a wall-scaling drill, showing that the training of Freshman year had by no means been forgotten. The scalers, who had previously acted as a band to lead in their classmates, were Barnes, Buff, Bushnell, Davis, Jewett, Jones, Lord, Senger, in charge of Drum-major Wentworth. The "stunt" was the work of Lord, and was well received.

Saturday evening the Musical Clubs tendered the graduating class a concert. Huntington Hall was filled with 1905 and its friends, and a most excellent concert was listened to. Sunday the baccalaureate sermon was preached in Trinity by the Rev. J. N. Blanchard. Dr. Blanchard took as his text "My Father worketh even until now, and I work," and delivered a powerful address.

Monday afternoon the Class Day exercises were held in Huntington Hall. The officers were G. DeW. Marcy, first marshal; T. E. Jewett, second marshal; L. T. Bushnell, third marshal; Norman Lombard, orator; G. B. Jones, prophet; E. B. Hill, statistician; Roswell Davis, presentation of gifts. The exercises were of great interest, especially on account of the presentation to the Institute by the class of seven panels of the reproduction of the old Huntington Hall frieze. Monday evening a very pleasant Senior dance was held at Brandon Hall. A programme of twenty-five dances was

carried out, and the affair was one of the most popular events of Commencement week.

Tuesday afternoon came the graduation exercises. 1905 claims the proud distinction of being the largest yet. In the evening was the grand and glorious wind-up at the "Pop." Any one who did not attend last year's "Pop" would consider this year's the loudest possible.

#### MASTERS OF SCIENCE

James McFarlan Baker, Franklin Murphy Chace, Lewis Cutler Clarke, Jr., William Bailey Fogarty, Julius Augustus Furer, Moise Herbert Goldstein, Frank David Hall, Sidney Morgan Henry, Alfred Henry Jacobs, Elbert Emerson Lochridge, Lewis Bowen McBride, George Merrill Magee, Frederic Nickerson, George Stanley Radford, Henry Woodbury Rowe, Ross Pelton Schlabach, Clayton Miller Simmers, Leon Hills Smith.

#### BACHELORS OF SCIENCE

##### COURSE I. CIVIL AND TOPOGRAPHICAL ENGINEERING

Charles Robert Adams, Chester Allen, John Ayer, James Evans Barlow, Robert Stanley Beard, Frederick Gardner Bennett, Frank Milton Carhart, Norman Moore Chivers, William Dexter Clarke, Richard Vincent Collins, True Herbert Files, Harry Richard Gabriel, Everett McLeod Graham, Theodore Green, Ralph Edgar Hadley, Reynold Munroe Harding, Clinton Oakley Harrington, Jr., Harvey Martin Hickok, George Albert Hool, Carl Alfred Houck, Carl Thomas Humphrey, Thomas Edward Jewett, Louis John Killion, Eugen Frederick Kriegsman, Oscar Charles Merrill, Harold Carlyle Mitchell, Theodore Parker Moorehead, Ilias Asaad Murr, Dow Hiram Nicholson, Lovell Hallet Parker, William Copeland Pickersgill, Waldemar Spaulding Richmond, Louis Ernest Robbe, Hallet Rice Robbins, Willard Eastman Simpson, Charles Huntington Smith, Frank Charles Starr, William Tufts, LeBaron Turner,

Earl Chase Weaver, Percy Leonard Wells, Ralph Nims Whitcome, George William Carlyle Whiting, Kilborn Whitman, Jr., Robert Emmet Wise, Bartolette Artman Yoder.

## COURSE II. MECHANICAL ENGINEERING

Joseph Cheney Baker, Arthur Field Belding, William Peet Bixby, Charles Edward Broad, Joseph Henry Brown, Jr., Leonard Theaker Bushnell, Robert Keep Clark, Leslie Clough, Sidney Lovett Cole, Edgar Bailey Cooper, Irving Henry Cowdrey, Robert Curtis Cutting, Philip Grenville Darling, Arthur Malcolm Dean, Walter Gottfried Eichler, John Henry Flynn, Jr., Arthur Emery Freeman, Clarence Edward Gage, Arthur Peterson Gerry, Wesley Clifton Gilman, Fred Warren Goldthwait, Carl Herman Graesser, Percy Granville Hill, Philip Edward Hinkley, John Hampden Holliday, Jr., William Gibbons Houskeeper, Edmund Joseph Hurley, George Bayard Jones, Charles Dean Klahr, Herman William Lackman, James McClurg Lambie, Maurice Birdsall Landers, Norman Lombard, Edward Henry Lorenz, John Sherwood Loughlin, Wallace Noble MacBriar, Horace James Macintire, Robert Walter McLean, Grosvenor DeWitt Marcy, Robert Wilbur Morse, Leon Murray Pease, Frederick Alexander Pirie, James Albert Pitts, George William Prentiss, Albert George Prescott, Charles Rollins Prichard, Charles Loring Rodgers, Charles Edwin Smart, Henry Joseph Stevenson, John Wallace Taylor, George Carlyle Thomas, Hiram LeRoy Walker, Alfred Lamson Whitmarsh, James Bryant Whitmore.

## COURSE III. MINING ENGINEERING AND METALLURGY

Roy Hutchins Allen, William Gilbert Ball, Edward Taylor Barron, Lloyd Thomas Buell, Henry Arthur Buff, Eugene Burton, Charles Horace Clapp, Howard Montgomery Cowper, Carl Eugene Danforth, Joseph Daniels, Charles Lake Dean, Frank Spencer Elliott, Thomas Francis Geraghty, John Tinker Glidden, William Strachan Gouinlock, Edwin Smith Graham, Bertrand Leroy Johnson, Charles Wiswell Johnston, Ben Edwin Lindsly, Milton Louis Rubel, Rich-

ard Warren Senger, William Livingston Spalding, George Gustav Wald, Albert Warren Wells, Horatio Whiting, Milford Wortham.

#### COURSE IV. ARCHITECTURE

George Herbert Barrows, Fernando Moreno Blount, Ward Parker Delano, Jr., Ralph Dammarell Emerson, Roberts Shepherd Foulds, George Charles Funk, Burton Edward Geckler, Charles Benajah Mayer, Nathaniel Atherton Richards, Ida Annah Ryan, William Fuller Smart, Sidney Talbot Strickland.

#### COURSE V. CHEMISTRY

Edward André Barrier, Allan Hanscom Barrows, Charles Reid Boggs, Walter Burnes, Max Cline, Frederick Malcolm Eaton, Frank Sheridan Farrell, Charles Field, 3d, Harry Wallace Gallup, Ralph Staples Gifford, Albert Champion Gilbert, Fred Willis Guibord, Myron Helpern, Henry Louis Jackson, William Herbert Keen, Arthur Channing Long, Jason Leslie Merrill, Isadore Niditch, Thomas Coulson Pinkerton, Albert Loomis Smith, Edward Church Smith, Edward Wight Washburn, Elmer Wesley Wiggins.

#### COURSE VI. ELECTRICAL ENGINEERING

Fred Hathaway Abbott, Carlton Elliot Atwood, Courtlandt Woodruff Babcock, James Phillips Barnes, Frank Wilbur Brownell, Thomas Breckinridge Cabell, Harry Prescott Charlesworth, Francis John Chesterman, Harold Gilliland Crane, John Churchill Damon, James Martin DeMallie, John Frederic Howard Douglas, Howard Maurice Edmunds, Joseph Conrow Field, Harry Cole Kendall, Edwin Morehouse Lines, Warren Weston Loomis, Elliott Lum, Waldo Vinton Lyon, Arthur James Manson, Frederick Parsons Poole, George Irving Rhodes, Ernest Gail Schmeisser, Frederic Joseph Schwarz, Chester Roy Shaw, Thomas Shaw, Sidney Alfred Smith, Frank Lamont Snow, Harold Clap Stetson, Maurice Edgar Weaver, Louis Clarence Winship.

## COURSE VII. BIOLOGY

Samuel Henry Ayers, William Herbert Beers, Jr., Selskar Gunn, Henry Azor Wentworth.

## COURSE VIII. PHYSICS

Henry Francis Lewis, Ray Hill White.

## COURSE IX. GENERAL STUDIES

Louis Wilbar Hammett, Edwin Bruce Hill, Roy Fisk Lovejoy.

## COURSE X. CHEMICAL ENGINEERING

Edward Hale Bartlett, Stuart Wells Benson, Walter Gregory Bent, Edward May Coffin, Robert Morse Folsom, Luther Elmer Gilmore, Willis Fleming Harrington, Stanley Taber Hyde, Warren Kendall Lewis, Robert Howard William Lord, James Harvey Payne, Preston Morris Smith, Herbert Mygatt Wilcox.

## COURSE XI. SANITARY ENGINEERING

Charles Alvin Emerson, Jr., John Herbert McManus, Ralph Edwin Tarbett, Albert Otis True, Albert Willard Walker.

## COURSE XII. GEOLOGY

Paul McClary Paine.

## COURSE XIII. NAVAL ARCHITECTURE

William Wetherall Ammen, Claude Aurelius Anderson, William Hildreth Blakeman, Edward Arthur Burkhardt, Sydney Atmore Caine, Walter Ayer Clarke, Roswell Davis, Henry Lawrence Dean, Herman Eisele, Edward Chester Grant, Thomas McCheyne Gunn, Henry Hiram Wheaton Keith, Charles Evan Leavitt, William Andrew Nelson, Adolph John Ortseifen, Victor Hugo Paquet, Frank

Edward Payne, George Wason Perry, Paul Justus Ralph, Arthur Edmands Russell, Russell Bissell Simons, Albert Howell Smith, Roger Pierce Stebbins, Gilbert Sanders Tower.

#### SOCIETIES AND CLUBS

*American Chemical Society.*—A regular meeting of the society was held May 26, to report on the progress of the investigations that have been carried on in Technology's research laboratory. The speakers of the evening were Professor A. A. Noyes, Professor W. D. Coolidge, and R. D. Mailey, '04.

*Chemical Society.*—The society held its annual dinner and election of officers at Tech Union May 11. Professors Talbot, Fay, and Walker, and W. H. Keen, '05, the retiring president, were the speakers.

The following officers were elected: J. A. Norton, '06, president; A. R. Heckman, '06, vice-president; F. H. Willcox, '06, secretary; C. E. Tucker, '06, treasurer; to Executive Board, C. B. Morey, '06.

*Mechanical Engineering Society.*—At a meeting of the society April 4 the following were elected for the ensuing year: H. V. O. Coes, '06, president; C. A. Howard, '06, vice-president; J. W. Anderson, '06, secretary; H. W. Kenway, '05, treasurer; L. H. Tripp, '06, P. J. Kennedy, Jr., '06, M. T. Lightner, '06, Executive Committee.

The following motions were passed: That the Mechanical Engineering Society express itself as utterly opposed to a union of the Institute of Technology with Harvard University.

That G. D. W. Marcy, the retiring president, be presented with a gavel.

At a meeting of the society, April 25, Mr. F. E. Stanley gave a talk on "Recent Developments of the Automobile."

*Architectural Society.*—At a meeting of the society held April 5 the following officers were elected for the year 1905-06: president, W. C. Furer, '06; vice-president, P. F. Mann, '06; secretary, E. H. Reed, Jr., '07; treasurer, E. L. Mayberry, '06; Executive

Committee, B. R. Honeyman, '06; R. T. C. Jackson, '06; C. G. Loring, '06.

*Civic Club.*—The club held its first annual dinner at the Union April 21. Dean Burton, Mr. Hayes Robbins of the Civic Federation, M. E. Vinton, Jr., S. C. Coey, T. L. Hinckley, and W. F. Englis spoke.

At the meeting of the club held May 10 at the Tech Union the following officers were elected for the coming year: president, W. F. Englis, '06; vice-president, P. B. Stanley, '06; secretary, T. L. Hinckley, '06; treasurer, A. H. Keleher, '06; Membership Committee, the officers of the club, C. T. Bartlett, '06, and C. F. Breitzke, '06.

*Walker Club.*—The elections for the ensuing year resulted as follows: president, C. G. Loring, '06; secretary, D. G. Robbins, '07.

*Musical Clubs.*—The Combined Musical Clubs held their annual dinner at the Hotel Nottingham May 13.

The elections resulted as follows: Combined Clubs: L. A. Parker, '08, president; C. B. Powell, '06, vice-president; P. N. Swett, '07, business manager and treasurer; H. C. Henrici, '06, secretary.

Glee Club: R. E. Keyes, '07, leader; R. G. Woodbridge, Jr., '07, manager. Mandolin Club: H. C. Henrici, '06, leader; H. A. Sulliwold, '07, manager. Banjo Club, O. G. Fales, '07, leader; G. T. Gambrill, Jr., manager.

*British Empire Association.*—A meeting of the association, held at the Tech Union Tuesday evening, May 2, was attended by thirty members. Selskar Gunn, president of the association, presided at the dinner. President Pritchett, Dean Burton, and Mr. O. F. Wells spoke to the association, complimenting it on the excellent purpose for which it had been so wisely founded. Mr. B. Heaton, of India, who is at present studying technical education in America, was one of the guests of the evening, and gave an interesting talk to his fellow-countrymen.

*Pennsylvania Club.*—A dinner of the club was held April 13 at the Union. The following officers were elected for the ensuing year: president, C. H. Shapleigh; vice-president, F. M. Fuller; treasurer, F. G. Dempwolf; secretary, R. J. Karch; Executive Committee, Messrs. R. G. Kann, Thompson, J. B. Sando.

*California Club.*—At a meeting held May 17 the following officers for 1905-06 were elected: L. F. Mesmer, '06, president; A. E. Rippey, '06, vice-president; L. C. Hampton, '07, secretary and treasurer; Dinner Committee, L. A. Parker, '06, and B. B. Holmes, '06.

The first dinner of the club was held June 2 at the Nottingham. Addresses were made by L. F. Mesmer, president, and L. C. Hampton, secretary of the organization. The aim of the club is to promote interest in Tech in their State, and also to promote good fellowship among its members.

*Chicago Club.*—The tenth annual dinner of the club was held April 7, at the Hotel Marliave.

President Mann presided at the meeting held afterward. The following resolution in regard to the proposed merger with Harvard was unanimously adopted by the club:—

*Resolved,* That the Chicago Club express its emphatic disapproval of any form of union with Harvard University whatever.

It was decided to hold a dinner in Chicago next September, to which all Chicago men belonging to the North-western Alumni Association will be invited. The dinner will be given for the special purpose of meeting all prospective students entering Tech next September.

#### 1907 TECHNIQUE

At a meeting of the *Technique* Board held April 17, A. H. Donnewald was elected editor-in-chief, M. McLeod business manager, and L. T. Walker secretary.

#### ANNUAL PRIZE DRILL

The annual drill of the Freshmen Cadet Corps was held at the Armory April 12.

C Company won the Company Competition Drill, and Medford High won the Interscholastic Drill.

Ten schools, including Brockton High, Medford High, Stoneham



High, Wakefield High, New Bedford High, Gloucester High, Northbridge High, Hyde Park High, Concord High, and Lowell High, were represented, each by a team of three men.

## ATHLETICS

### ANNUAL SPRING MEET

The class of 1906 won the Spring Meet April 22, scoring 64 points. The Sophomores were second with 38 points, 1905 won 32 points, and 1908 was last with 20 points.

#### *Summary of Points*

	1905	1906	1907	1908
100-yard dash . . . . .	—	5	6	—
220-yard dash . . . . .	—	8	3	—
440-yard dash . . . . .	—	8	3	—
1-2 mile run . . . . .	1	7	—	3
1-mile run . . . . .	—	5	5	1
2-mile run . . . . .	5	3	—	3
Pole vault . . . . .	4	5½	1½	—
220-yard hurdles . . . . .	—	1	10	—
120-yard hurdles . . . . .	5	—	5	1
Shot put . . . . .	2	4	—	5
Hammer throw . . . . .	5	5	1	—
Discus throw . . . . .	5	2	3	1
High jump . . . . .	5	3½	½	2
Broad jump . . . . .	—	7	—	4
Indoor meet . . . . .	20	11	30	5
Totals . . . . .	52	75	68	25

### DUAL MEET

Tech was defeated by Amherst in the Dual Meet, May 13, by a score of 74½ to 65½. The events were closely contested and exciting throughout, so that the final outcome was uncertain until the last two events.

*Summary of Points*

	Amherst	M. I. T.
1-mile run . . . . .	5	5
440-yard dash . . . . .	8	2
100-yard dash . . . . .	6	4
120-yard high hurdles . . . . .	5	5
880-yard run . . . . .	5	5
2-mile run . . . . .	0	10
220-yard dash . . . . .	5	5
220-yard hurdles . . . . .	8	2
High jump . . . . .	2½	7½
Shot put . . . . .	5	5
Broad jump . . . . .	10	0
Hammer throw . . . . .	2	8
Pole vault . . . . .	5	5
Discus throw . . . . .	8	2
Total . . . . .	74½	65½

## THE CABOT MEDALS

The Committee on the Cabot Medals announces the following awards: Medals, C. B. Mayer, '05, A. T. Heywood, '06, A. E. Hartwell, '07, H. G. Pastoriza, '07, A. H. Keleher, '06; Honorable Mention, L. D. Smith, '07, A. R. Hunter, '08, A. E. Greene, '06, B. D. Johnson, '07.

## THE GRADUATES

REPORT OF EXECUTIVE COMMITTEE OF THE M. I. T. ALUMNI ASSOCIATION ON THE VOTE RELATIVE TO THE "PROPOSED AGREEMENT" WITH HARVARD

JUNE 1, 1905

HENRY S. PRITCHETT, Ph.D., LL.D.

President Massachusetts Institute of Technology.

*Dear Sir,*—In a letter dated March 31 you advised the Executive Committee of the Alumni Association of the request of the Corporation for an expression of opinion from the alumni on the proposed agreement between the Institute and Harvard University. Subsequently the committee received from you a copy of the proposed agreement with memoranda in explanation of certain paragraphs, together with a copy of the financial statement by the Treasurer of the Corporation, Mr. George Wigglesworth, which statement you requested the committee to transmit to the alumni, in accordance with a vote of the Corporation.

While the official vote of the Corporation called only for an expression of opinion from the alumni, the committee has understood from you that the Corporation desired to have, as well, a vote from non-graduates. The committee has consequently presented the question to each alumnus and former student whose address is known. All non-graduates have been included without regard to the extent of their connection with the Institute. The alumni thus addressed number 2,975, and the former students 3,350.

In presenting the question, the committee has conceived it to be its duty to collect all available information bearing on the subject, and to present the same, with the views of advocates and opponents of the agreement, in an impartial manner.

On April 12 a circular was sent to the alumni and former students, advising them of the request of the Corporation for an expression

of opinion. The circular was accompanied by a copy of the proposed agreement, and gave notice of the subsequent transmission of the Treasurer's statement and other information.

On April 25 a second document was sent out, containing further information bearing on the proposed agreement, a general view of the proposed plan by the President of the Institute, the financial statement by the Treasurer, transmitted at the request of the Corporation, and statements presenting the advantages and disadvantages of the proposed agreement prepared by members of the Corporation.

This second document included a call for a meeting in Huntington Hall on Thursday, May 4, and announced the presentation of the various phases of the agreement by the following speakers: President H. S. Pritchett, Dean A. E. Burton, Colonel T. L. Livermore, and Messrs. J. R. Freeman, E. S. Draper, and J. P. Munroe.

Through the courtesy of the TECHNOLOGY REVIEW a full report of the meeting, and the report of the Faculty on the proposed agreement, together with a reprint of the previous documents containing general information, were printed in a special issue of the magazine.

Copies of this special number of the REVIEW were mailed May 16 to 18 to the alumni and former students, followed a day later by blank ballots, accompanied by circulars, giving instructions as to their filling in and return. Provision was also made, in accordance with the expressed wish of some members of the Corporation, for statements giving reasons for the votes. Copies of the documents referred to are transmitted herewith.

The Executive Committee now transmit through you to the Corporation the expression of opinion of the alumni and former students received up to the closing of the polls at 6 P.M., May 31, as follows:—

Alumni in favor of the proposed agreement . . . . .	458
Alumni opposed to the proposed agreement . . . . .	1,351
Alumni unclassified . . . . .	22
Former students (not graduates) in favor of proposed agreement .	376

Opposed to proposed agreement . . . . .	684
Unclassified . . . . .	11

Attached hereto are tabulated memoranda giving the vote by classes.

The individual ballots, arranged in card catalogue form, accompanied by the 505 explanatory letters, arranged in vertical files, are available for examination, and will be placed at the disposal of the Corporation, if it so requests, at such time and place as will suit its convenience. In cases where explanatory letters accompany the votes, the fact is indicated on the cards.

Respectfully submitted.

(Signed) FRANK L. LOCKE,  
President M. I. T. A. A.

## VOTE BY CLASSES

*Graduates*

<i>Class</i>	<i>Favor</i>	<i>Oppose</i>	<i>Class</i>	<i>Favor</i>	<i>Oppose</i>
'68 . . . . .	2	5	'87 . . . . .	6	31
'69 . . . . .	1	2	'88 . . . . .	18	28
'70 . . . . .	—	5	'89 . . . . .	15	26
'71 . . . . .	1	6	'90 . . . . .	16	46
'72 . . . . .	5	4	'91 . . . . .	22	35
'73 . . . . .	2	8	'92 . . . . .	18	53
'74 . . . . .	4	4	'93 . . . . .	20	55
'75 . . . . .	4	11	'94 . . . . .	20	60
'76 . . . . .	6	12	'95 . . . . .	17	59
'77 . . . . .	8	13	'96 . . . . .	24	95
'78 . . . . .	3	6	'97 . . . . .	28	78
'79 . . . . .	5	9	'98 . . . . .	28	81
'80 . . . . .	2	3	'99 . . . . .	26	81
'81 . . . . .	3	11	'00 . . . . .	24	70
'82 . . . . .	3	10	'01 . . . . .	30	95
'83 . . . . .	2	7	'02 . . . . .	28	93
'84 . . . . .	5	14	'03 . . . . .	25	86
'85 . . . . .	3	13	'04 . . . . .	22	116
'86 . . . . .	12	20	Total . . . . .	458	1,351

## VOTE BY CLASSES

*Non-graduates*

<i>Class</i>	<i>Favor</i>	<i>Oppose</i>	<i>Class</i>	<i>Favor</i>	<i>Oppose</i>
'68 . . . . .	3	8	'87 . . . . .	9	29
'69 . . . . .	1	8	'88 . . . . .	18	27
'70 . . . . .	7	9	'89 . . . . .	26	14
'71 . . . . .	7	8	'90 . . . . .	13	18
'72 . . . . .	5	3	'91 . . . . .	17	19
'73 . . . . .	7	11	'92 . . . . .	10	17
'74 . . . . .	5	15	'93 . . . . .	19	31
'75 . . . . .	10	16	'94 . . . . .	21	32
'76 . . . . .	11	5	'95 . . . . .	4	26
'77 . . . . .	3	9	'96 . . . . .	10	31
'78 . . . . .	5	5	'97 . . . . .	11	23
'79 . . . . .	4	15	'98 . . . . .	14	28
'80 . . . . .	7	1	'99 . . . . .	13	32
'81 . . . . .	7	10	'00 . . . . .	13	31
'82 . . . . .	7	8	'01 . . . . .	10	28
'83 . . . . .	4	11	'02 . . . . .	15	27
'84 . . . . .	12	11	'03 . . . . .	13	36
'85 . . . . .	10	14	'04 . . . . .	16	50
'86 . . . . .	9	18	Total . . . . .	376	684

## COMMENCEMENT •

Following the plan outlined in the April *Review* (Vol. VII. p. 196), Commencement was quite generally observed by the alumni. Almost every class met for spreads in the afternoon or dinner in the early evening and adjourned thence to the "Pops," where Tech Night was celebrated with much enthusiasm. Most of the spreads were held at the Brunswick, and the earlier classes, where the numbers were small, combined for dinner. '68 to '77 (inclusive) dined at the Thorndike, while '78 to '84 dined at the Vendome. '85, '86, and '87 had a union dinner at the Boston Athletic Association, and each of the subsequent classes, with few exceptions, met for dinner at some club or hotel.

The number of tickets sold to Institute men and their friends for

the Pop Concert was 1,675, and a record of the attendance upon the floor of Symphony Hall is as follows:—

Class of '68 . . . . .	5	Class of '89 . . . . .	4
“ “ '69 . . . . .	3	“ “ '90 . . . . .	12
“ “ '70 . . . . .	2	“ “ '91 . . . . .	18
“ “ '71 . . . . .	1	“ “ '92 . . . . .	14
“ “ '72 . . . . .	2	“ “ '93 . . . . .	26
“ “ '73 . . . . .	5	“ “ '94 . . . . .	10
“ “ '74 . . . . .	15	“ “ '95 . . . . .	32
“ “ '75 . . . . .	12	“ “ '96 . . . . .	16
“ “ '76 . . . . .	10	“ “ '97 . . . . .	6
“ “ '77 . . . . .	9	“ “ '98 . . . . .	23
“ “ '78 . . . . .	4	“ “ '99 . . . . .	20
“ “ '79 . . . . .	8	“ “ '00 . . . . .	12
“ “ '80 . . . . .	4	“ “ '01 . . . . .	16
“ “ '81 . . . . .	9	“ “ '02 . . . . .	42
“ “ '82 . . . . .	5	“ “ '03 . . . . .	19
“ “ '83 . . . . .	5	“ “ '04 . . . . .	52
“ “ '84 . . . . .	9	“ “ '05 . . . . .	150
“ “ '85 . . . . .	10	“ “ '06 . . . . .	24
“ “ '86 . . . . .	8	“ “ '07 . . . . .	22
“ “ '87 . . . . .	16	“ “ '08 . . . . .	22
“ “ '88 . . . . .	15		

Instructors and Professors, 8. Not accounted for, 20.

#### NORTH-WESTERN ALUMNI ASSOCIATION OF M. I. T.

The annual dinner was held at the University Club, February 25, about one hundred members being present. The speakers of the evening were President Pritchett, James H. Eckels, president of the Commercial National Bank of Chicago and former controller of the currency, and Merritt Starr, a Harvard man.

During the dinner each man was called on to rise, give his name and address, state of blessedness, and number of children. A silent toast was drunk to the gifted composer of the Stein Song, Frank F. Bullard, '86, and C. M. Wilkes, '81, our honored vice-president, who passed away during the past year. The Committee on Nominations reported the following: Frederick Greeley, '76,

president; E. H. Huxley, '95, vice-president; A. E. Zapf, '95, secretary and treasurer; and J. L. Shortall, '87, E. M. Hagar, '93, and Kenneth Lockett, '02, for the executive committee. All were unanimously elected.

A vote of thanks was passed to the retiring officers and committee, particularly to the secretary and treasurer, C. H. Young, '96, upon whom the burden of the office of president and vice-president fell, owing to the death of Vice-President Wilkes and the absence from this country of the president.

The first informal dinner of 1905 was held at the Bismarck. Mr. William S. MacHarg, consulting engineer, city of Chicago, and Mr. Isham Randolph, chief engineer Sanitary District, Chicago, gave an informal talk on the suit brought by the city of St. Louis against the city of Chicago for the pollution of the water supply by the construction of the sanitary canal.

A. E. ZAPF, '95, *Sec'y*,  
3321 Armour Avenue, Chicago, Ill.

#### THE ROCKY MOUNTAIN TECHNOLOGY CLUB

At our spring dinner, which occurred in March, we had quite a large attendance, and a very merry time resulted. We had a number of the United States Geological Survey men with us; and, as it was just previous to their going out into the wilds of the mountains, they naturally felt quite jovial.

After dinner, the transaction of business, and after lengthy discussion on the merger between Tech and Harvard, we adjourned to the Pipe and Bowl Room of the University Club, and sang songs from the new Technology song-book; and I can assure you the Tech men had a mighty good time, although I fear our singing may have been somewhat disastrous to the musical ear of some of the auditors.

Mr. A. H. Rogers, '90, has just passed through Denver *en route* to New York City, where he will open an office as consulting engineer. For some time he has been in Mexico, designing a concentrating mill for the Velardena Mine.



Mr. Frank E. Shepard, '87, has been busily engaged in designing a 500-ton mill for the Gold Prince Mine, Silverton, Col. The Denver Engineering Works Company, of which he is president, has the contract for the machinery.

Mr. Hugo Druehl, 1903, is in Colorado Springs, Col., where he is secretary of the Robinson Drug Company.

The writer is having some very interesting work at present in the installation of a new power plant and the erection of some new buildings for the Denver Fire Clay Company, of which he is superintendent. The plant is to be electrical, machines being arranged in groups, a motor being installed for each group. On account of the great variation of load, two generating units will be used, thus giving considerable flexibility.

H. O. BOSWORTH, '02, *Sec'y*,  
1742 Champa Street, Denver, Col.

#### THE TECHNOLOGY CLUB OF NEW YORK

On March 10 Mr. Reginald Pelham Bolton gave a very interesting talk on "Indian Life on Upper Manhattan Island." Mr. Bolton treated one of the most interesting phases of our local history, and the evening was thoroughly enjoyed by every one.

Sadazuchida, consul-general of Japan, was the guest at dinner of the club on the evening of March 30. A touch of local color was added by drinking Mr. Uchida's health in saké, the national beverage of Japan.

The dinner was the first of a series that the Club proposes to give in honor of distinguished New Yorkers, chiefly those interested in business and politics.

On April 10 Mr. Charles M. Jacobs, chief engineer of the Pennsylvania Tunnel and the North River Tunnel, gave a very interesting and instructive lecture on "Subaqueous Tunnelling, with Particular Reference to the North River Tunnel." It is largely due to Mr. Jacobs's efforts and ingenuity that the North River Tunnel is rapidly approaching completion, and his account of the methods adopted to overcome the almost insurmountable difficulties in con-

nection with its construction was extremely instructive. Mr. Jacobs is an extremely busy man, and the club considers itself most fortunate in having secured one of his most valuable evenings.

Our second Ladies' Night, a musicale and euchre, was held on April 29, nearly one hundred members and guests being present. The evening was such a success that it is proposed to have them more frequently next season.

The privileges of the club are most cordially extended to all members of other Technology clubs, on presentation of a card from their secretary.

It is sincerely hoped that all Technology men, when making a visit to the metropolis, will avail themselves of the opportunity to come round and get acquainted. If you haven't a friend in the club, come and find a few. If you have, come round and meet them.

C. B. ANNETT, '02, *Sec'y*,  
36 East 28th Street, New York, N.Y.

#### TECH SOCIETY OF WESTERN NEW YORK

On May 6 a joint meeting was held at the University Club by the various alumni associations in Buffalo, to consider the question of establishing a College of Arts and Sciences at the University of Buffalo. Our association was represented by Messrs. Ricker, Boyd, Danforth, Shed, and Holland. The meeting was well attended, and the discussion was extremely interesting. Each alumni association selected one of its members as representative on the General Executive Committee. Mr. George Ricker was selected to represent the Institute.

On May 20 a meeting of the society was held at the University Club, at which Messrs. Boyd, Ricker, Lufkin, McDonnell, Faxon, Lane, Lee, Johnson, Vogel, Adams, Mackay, Shed, Sanders, Staples, and Schaffer were present. After dinner the meeting was called to order with Mr. George Ricker in the chair. The secretary called the attention of the society to the recent death of one of our members, Mr. George W. Davenport, third vice-president

of the Niagara Falls Power Company. Mr. Davenport was operated on for appendicitis on Saturday, May 13; but the disease had progressed too far, and he died on the following Thursday. He was extremely popular with his associates, and very much liked by all who came in contact with him.

The merger question was discussed from various standpoints; and a straw vote showed an almost unanimous opposition, not from sentimental reasons, but because we did not consider that the future welfare of the Institute and the general cause of professional education would be benefited thereby.

The subject of a suitable memento of the Institute, to hang in a conspicuous place at the University Club-house, was discussed. The secretary was appointed a committee to ascertain the cost of bronze copies of the Institute Seal and the bas-relief of President Rogers. Several other questions of interest were discussed. The meeting then adjourned until the annual meeting on the second Saturday in September.

H. A. BOYD, '79, *Sec'y*,  
123 Erie Co. Bank Bldg., Buffalo, N.Y.

#### THE TECHNOLOGY CLUB OF PHILADELPHIA

List of toasts at the annual dinner, March 6, 1905, St. James Hotel: Henry S. Pritchett, "Technology and its Problems"; James M. Dodge, president Link Belt Engineering Company, "The Life Work of a Technical Man"; Warren Powers Laird, Professor of Architecture, University of Pennsylvania, "Fine Art and Scientific Education"; Howard B. French, president Philadelphia College of Pharmacy, president Equitable Trust Company; Talcott Williams, LL.D., "The Working Student and the Working World"; Alex. Rice McKim, '85, president Technology Club of New York; M. O. Leighton, '96, secretary Washington Society of the M. I. T.; E. V. Seeler, '90, toastmaster.

As for news from the society or from individual Institute men, I have little to offer. We have had no meeting since the annual dinner, March 6, its success having been so great that we have

rested on our laurels ever since; consequently I have not been in a way to learn much of the recent movements of our members.

The cards are out for the wedding, on June 21, of Mr. Edgar Pierce Trask (Tech, '99) to Miss Edith L. Stokes, of Woodbury, N. J., the ceremony to take place in the Presbyterian Church, Woodbury, at 8.30 P.M. William A. Kingman, V., '00, is the newest arrival in Woodbury, having taken a position in the Dupont Powder Works at Gibbstown, a few miles away.

We of the New York Ship-building Company are wondering how long the present stagnation in the coast ship-building industry is to continue. If it were not for the fact that Uncle Sam wants war vessels built, the yard would be entirely idle, as at present we have nothing but government ships in the slips, the armored cruiser "Washington" completing in the wet docks, and the battleships "Kansas" and "New Hampshire" still on the ways. Some day we shall have an economical naval committee in Washington, and then we'll all be seeking occupations in other fields of usefulness.

JERE R. DANIELL, '97, *Sec'y*,  
102 Couper Street, Woodbury, N. J.

#### THE WASHINGTON SOCIETY OF THE M. I. T.

On April 15 Marshall O. Leighton resigned from the office of secretary; and the executive committee elected Mr. Bernard Herman, '99, to fill the vacancy. The secretary's address is 702 H Street, N.W., Washington, D.C.

Our meetings have continued to be held regularly at the University Club on the second and fourth Mondays of the month, and there will be no suspension of them during the summer. On May 8 the room was crowded to discuss the "proposed agreement." Professor Allen was the guest of honor, he being in town in attendance upon the sessions of the International Railway Congress. After dinner the men entered into a vigorous discussion of the merger. There was but one avowed advocate of the proposition.

ALBERT S. MERRILL, '00, *Sec'y pro tem.*

## THE M. I. T. CLUB OF CINCINNATI

The M. I. T. Club of Cincinnati held their meeting to discuss the proposed combination with Harvard Wednesday evening, May 24. The members were delightfully surprised to have for their guest Professor Swain, who has taken such an interest in the matter. He had come here with one of the visiting commercial clubs which were being entertained by the Cincinnati Commercial Club. He spoke very forcibly in favor of union. A test vote was taken, showing nine in favor and one against.

A. H. PUGH, Jr., '97, *Sec'y*,  
1912 Madison Road, Cincinnati, Ohio.

## TECHNOLOGY CLUB OF THE MERRIMACK VALLEY

The spring meeting of the society was held on Friday evening, April 7, at the Yorick Club, Lowell. Special efforts were made by the executive committee to insure a good attendance, and the result was most gratifying. Notices were sent to all Tech men in the Merrimack Valley from Manchester to Haverhill, and many names were added to the membership list. Professor George F. Swain was the guest of the evening, and after the dinner he spoke at some length on important matters concerning the Institute. The chief of these topics, naturally, was the proposed agreement with Harvard University. As was well known, Professor Swain is one of the few members of the Faculty who are in favor of the union, and it was with the end in view of hearing that phase of the question that Professor Swain was invited to speak. The speaker reviewed the various questions that must come up when the future welfare of the Institute is considered, and showed how many of these would be successfully answered if the proposed agreement was adopted. He asked that every one give his time and thoughtful consideration to a study of the terms of the agreement when it should be put before the Alumni for their vote. He asked that, however much the men might be opposed to those few who favored some

alliance with Harvard as represented by himself, these opponents do them the justice of believing that they acted in the best of faith, and had no other thought at heart but the welfare of the Institute. At the close of his speech, although most of those present were opposed to the merger, Professor Swain was given cheer after cheer; and he was given a rousing send-off as he left the dining-hall to go for his train.

During the dinner the cheering of the various classes, as given at the Hotel Somerset in 1904, was duplicated in miniature. After the departure of Professor Swain a musical programme was carried out by Messrs. Barker, Crosby, and others.

Those present at the dinner were as follows: Whittaker, '69, Silsbee, '74, Bowers, '75, Faulkner, '76, Alden, '77, Brown, '77, Nelson, '77, Hale, '77, Hildreth, '87, Sjöström, '88, Hamblet, '88, Eastman, '88, Carney, '93, Crosby, '93, Barker, '96, Thompson, '96, Sjöström, '96, Fairbanks, '97, Bowen, '97, Eames, '97, Smith, '97, Collins, '97, Lambert, '98, Wesson, '98, Perkins, '99, Perkins, '01, Chalifoux, '02, Powers, '03, Turgeon, '04, Ingram, '04, Hobson, '06, and Stickney.

JOHN A. COLLINS, Jr., *Sec'y*,  
74 Saunders Street, Lawrence, Mass.

#### THE VERMONT TECHNOLOGY ASSOCIATION

On Friday evening, May 26, a dinner of Vermont Technology men was held in the Hotel Berwick in Rutland, Vt., and resulted in the organization of the Vermont Technology Association.

A number of Tech men located in and about Rutland had conceived the idea of forming such an organization several months previous to the meeting; and, after corresponding with Dr. Tyler of the Institute and Mr. Wood, secretary of the Technology Fund Committee, preliminary notices were sent to all graduates and former Tech men in the State. The first of these notices brought forth a number of most enthusiastic letters, after which the local committee, consisting of E. T. Pollard, '02, R. Proctor, Jr., '02, and J. F. Ancona, '03, sent out a rough draft of a provisional con-

stitution, and arranged for a meeting to be held on the day and at the place before mentioned. The committee had previously ascertained the names and addresses of thirty-one Tech men in Vermont. This number was later reduced by two, who were for the time being in business outside of the State. The list included representatives from most of the classes, ranging from '69 to '04, the former being represented by Judge Henry A. Harman, of Rutland, Vt. The classes of '90 and '02 led in point of numbers, each having three men in the State.

It was decided to hold the opening meeting in Rutland, as fully a dozen men were located there or very near there; and it seemed to be as central a point as any for those living elsewhere in the State. A very cordial invitation was received from Vermont's only co-ed, Mrs. Helen Chamberlain Dodd, of East Corinth, Vt., to have the reunion held at her house; but the committee felt this to be unwise.

The final notices for the dinner brought forth fourteen acceptances; but this number was eventually reduced to eleven, in two cases by unexpected business engagements, and in the third by illness.

Eleven men assembled for the dinner: Judge Henry A. Harman, '69, Samuel T. Braley, '79, Professor Edward A. Robinson and Henry W. Clement, '90, C. P. Moat, '96, H. C. Belcher, '98, L. F. Miller, '01, E. T. Pollard and R. Proctor, Jr., '02, J. F. Ancona, '03, D. L. Galusha, '04.

The program of the evening, as arranged to follow the dinner, consisted of some preliminary remarks, outlining the work thus far accomplished toward organization by R. Proctor, Jr., '02, who presided in behalf of the committee. This was followed by the general discussion of the form of organization most desirable, two forms of constitution having been outlined by the committee, one of which was explained and discussed by E. T. Pollard and the other by J. F. Ancona. The meeting eventually adopted the constitution calling for an annual meeting to be held in April or May, the time and place to be selected by the executive committee of the association, said meeting to consist of a dinner, a business

meeting in the evening, to be followed the next day by the inspection of some manufacturing or other work of engineering interest. The officers of the organization consist of a president, vice-president, secretary and treasurer (one person), and two other members elected in alternate years to serve two years each, who, with the president, vice-president, and secretary-treasurer, constitute the executive committee.

The following officers were elected: J. F. Ancona, president; C. P. Moat, vice-president; R. Proctor, Jr., secretary and treasurer; H. W. Clement, '90, and E. T. Pollard, '02, members of the executive committee.

Messrs. Ancona and Proctor are both with the Vermont Marble Company; Mr. Moat is the chemist for the State Board of Health, located at Burlington, Vt.; Mr. Clement and Mr. Pollard are in Rutland, the former at the head of a large retail coal business, and the latter instruction engineer for the Patch Manufacturing Company. It was deemed advisable to have a majority of the Executive Committee within easy access of Rutland.

After the business meeting Judge Harman favored us with a most interesting talk on President Rogers. He spoke of President Rogers's birth and early education, and of his sudden death on the Commencement platform in '82. Judge Harman spoke of President Rogers's early work in connection with the Geological Survey, the Virginia branch of which he was at one time the head of, and later of his coming to Boston, for which there may be two causes, first that his brother was a professor at Harvard, and, second, that his wife was a Boston girl. Judge Harman divided President Rogers's work in connection with the Institute into three periods: the preparatory work, extending from 1846 to 1859; the preliminary organization, from '59 to '61; and the real organization, with the opening of the school, consisting of fifteen students, in a building rented for the purpose on Summer Street, this period extending from '61 to '65. Judge Harman spoke at considerable length of his actual acquaintance with President Rogers in the class-room, and of the latter's strong personality and great gift of expression. In closing Judge Harman said in part: "No one



ever came in contact with President Rogers without being conscious of the great dignity of the man, of his noble presence. He was, in truth, a perfect gentleman. He seemed to the students to carry the Institute, to shape and mould its course by his strong personality. He was never nicknamed. Rogers gave not of his money as Elihu Yale or John Harvard gave to the universities bearing their names, but gave of what was of even more value to the Institute in those days of its small and unpretentious beginnings. He gave of his mind and soul and life the best that he had; and, when the day of final accounting shall come, and each and all of us shall be asked to show what we shall have accomplished in the way of our opportunities, surely the name of President Rogers will have a place on the list of good and faithful workers."

At the close of Judge Harman's remarks all indulged in telling anecdotes of their days at Tech, and in a general good time.

At the invitation of Professor Robinson of the University of Vermont, it was unanimously voted to hold the next meeting at Burlington.

On the following morning a number of the men visited some of the quarries of the Vermont Marble Company, located in West Rutland, the out-of-town men leaving for their homes at noon Saturday.

Practically all of the Tech men in the State who were unable to be present at the dinner have manifested a desire to become members of the organization, and it is expected that the membership will at once increase to twenty-five or thirty. The association hopes that all Tech men coming into the State, whether permanently or temporarily, will communicate with the secretary of the association, and in that way come in touch with his fellow-alumni.

REDFIELD PROCTOR, Jr., *Sec'y and Treas.*,  
Proctor, Vt.

#### THE TECHNOLOGY CLUB OF HARTFORD, CONN.

On March 25, 1905, fourteen Tech alumni met at the home of Mr. C. L. W. Pettee, Hartford, to consider the formation of a Technology Club of Hartford. A committee of three was ap-

pointed to draft a constitution, nominate officers, and call another meeting.

On May 20, 1905, the next meeting was held, fifteen alumni being present. A constitution similar to that of the New York Technology Club was adopted, and a board of governors elected, as follows: Mr. C. L. W. Pettee, president; Mr. Howard Burdick, vice-president; Mr. K. E. Peiler, secretary-treasurer; Mr. Alden; and Mr. A. M. Holcombe.

It was decided to hold informal meetings about once a month, at which some interesting subject would be discussed. We hope to have about thirty members by fall.

K. E. PEILER, '04, *Sec'y*,  
56 Allen Place, Hartford, Conn.

## NEWS FROM THE CLASSES

1868.

PROF. ROBERT H. RICHARDS, *Sec.*, Mass. Inst. of Technology,  
Boston, Mass.

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R. H. Richards has received an appointment on the United States Geological Survey to study the black sands of the Western placers and gold dredgers, as well as the Pacific Ocean beach sands, with special reference to their yield of platinum, and also to find, if possible, a commercial method of extracting the platinum economically.

1875.

E. A. W. HAMMATT, *Sec.*, 10 Neponset Block, Hyde Park, Mass.

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On the evening of June 2 the class of '75 was represented by three members at the reception to the graduating class by the alumni; namely, Vice-President Beal, Dorr, and Hammatt. We took our part in the exercises, presenting '05 with a certain cup, suitably inscribed. The following day the class held its annual June social meeting for members and their families. Mixer had kindly invited us to meet at his house at Swampscott, and, when details of the trip appeared, we found that he had provided transportation by a large steam yacht, placed at his disposal by a friend. We had a beautiful run to Marblehead, during which it was discovered that the main brace had parted, necessitating that it be spliced by some of the members. After a few minutes in Marblehead Harbor, we headed for Swampscott, and on arrival off Mixer's house took to the boats, and landed on his grounds. The doctor, with his wife and children, not forgetting the dog, made every one feel perfectly at home, and a most enjoyable afternoon and evening was the result. The only drawback was the comparatively small representation. Those present,

in addition to our host and his family, were President Hibbard and wife, Mr. and Mrs. George Bowers and daughter, Mr. and Mrs. E. S. Dorr with two daughters, Dr. W. H. Ruddick and wife, Mr. and Mrs. Hammatt, son and daughter, R. S. Atkinson, Temple, and H. Dabney. Kinnicutt was detained, and failed to join us.—On the 6th (Commencement Day) the classes of '68-'77 had a union dinner at the Thorndike, and I am informed that the following '75 men attended; namely, Bowers, Cabot, Dorr, Dabney, Hibbard, Kinnicutt, Mixter, and Prentiss. In the evening, at the "Pop," Prentiss failed to appear, but in his place we could muster Arnott, Atkinson, Burrison, Crosby, Hammatt, Ruddick, Robinson, Stoddard, and Temple, in addition to the others who attended the dinner.—The secretary feels that an apology is due the members of the class for the short time previous to the date of the class meeting that the notices were sent out, but a curious combination of circumstances, entirely beyond his control, was the cause. He would renew his request that any one having copies of the *Spectrum* published by '75 during 1873-74 communicate with him.

1884.

PROF. WM. L. PUFFER, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

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The secretary is very sorry to have to announce the death of our classmate Francis M. Haines, who died in Fort Worth, Tex., June 1, 1905. The funeral was at Forest Hills Cemetery, Sunday, June 3, and was not attended, as far as is known, by any of our class, as the notice was not seen in time. Haines prepared for the Institute at the Chauncy Hall School, and entered with a number of us from that school, and took the Mining Course.—A letter from Edward V. Sedgwick says that he is now in France as the European manager of the mechanical expert department of the Galena Signal Oil Company, 34 Rue du Louvre, Paris.—Adams, Appleton, Bardwell, Gill, Puffer, and Rotch enjoyed the class dinner and "Pop" concert, and tried their best to fully stand for the class under the various trying circumstances of that time. The secretary makes

an appeal to the class to keep him in mind when they feel like writing letters, so that he may have plenty of material for this part of the REVIEW.

1887.

EDWARD G. THOMAS, *Sec.*, 1269 Broadway, New York, N.Y.

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At the Commencement exercises of Columbia University George F. Sever received the honorary degree of Master of Science,—an honor which he has thoroughly earned by his very successful work as Adjunct Professor of Electrical Engineering at the university.—H. C. Spaulding, having satisfactorily accomplished the introduction of the motors and dynamos made by the Triumph Electric Company in the South, has moved to New York, where he will be assistant sales manager for the company. His office is at 39 Cortlandt Street.—The Baltimore office of the General Electric Company, Fred. C. Todd, manager, is now at 1600 Continental Building.—Sparhawk reports “one more daughter, making three of a kind.” Probably does not need two boys to have a “full house.”—George W. Patterson has recently been promoted to the Professorship of Electrical Engineering at the University of Michigan.—Twombly, after fifteen years in the engineering work of the S. D. Warren Company at Cumberland Mills, has come out of the woods, and joined the engineering force of Westinghouse, Church, Kerr & Co. in New York.—W. H. Brainerd, who is in partnership with Leeds, '93, won the architectural competition for the Carnegie Library at the University of Maine.—'85, '86, and '87 had another very pleasant joint dinner on “Pop” night, June 6, at the Boston Athletic Club. '87 was represented by Bryant, Cameron, Cobb, Crosby, A. L. Cushing, Draper, Hussey, Lane, Sears, Taintor, F. A. Thomas, G. R. Tucker, Very, and Wakefield, while Sprague joined the gathering later.—Mosman is now in charge of the East Helena smelter of the American Smelting and Refining Company.

1888.

WILLIAM G. SNOW, *Sec.*, north-west corner Broad and Wallace Streets, Philadelphia, Pa.

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The annual class dinner took place at the Hotel Vendome on June 6, and was attended by Blanchard, Silsbee, Claflin, Williams, Sjöström, Bates, Cole, Gage, Thompson, Shaw, Guild, Wood, Runkle, Bridges, Sawyer. The report of the secretary-treasurer was read and accepted. Alfred H. Sawyer was re-elected president. After the dinner the class adjourned to the "Pop" concert, where Conner added one to the number. Here a very enthusiastic Tech night was enjoyed.—Answers to the secretary's notice in regard to the class dinner brought out the following changes in the occupation and address of certain members of the class: Everitt Kilburn Taylor has formed a partnership with Richard Keeler Mosley, under the firm name of Taylor & Mosley, architects, with offices at 1 Nassau Street, New York City.—L. B. Newell is located at 170 Summer Street, Boston, in the advertising sign business, representing several of the largest companies in the country in this line.—William L. Dearborn has resigned as local manager of the American Bridge Company at New Orleans, La.—Franklin Henshaw, formerly with Dickson Manufacturing Company, is now engaged in the bond and stock business in Scranton, Pa.—William A. Hall writes that he has resigned from the management of the Casein Company of America in order to return to the paper business. He is now president of the Eastern Timber Company, with offices at 135 Broadway, New York City.—Fred J. Wood is now in Foxboro, Mass., as chief engineer of the Boston, Pawtucket & Providence Street Railway Company. It is expected that this line will be in operation within the next two years.

1889.

PROF. F. A. LAWS, *Sec.*, Mass. Inst. of Technology, Boston, Mass.

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One of the effects of the great alumni celebration of last year was to demonstrate that the Institute might derive much from the es-

tablishment of the custom of adequately celebrating the Commencement season. To this end Tech Night at the "Pops" and the various class dinners were arranged for the same evening. The '89 dinner was at the Lenox. Those present were J. E. Chandler, Hollis French, H. H. Hunt, F. W. Hobbs, H. Howard, W. S. Johnson, W. H. Kilham, W. W. Lewis, F. A. Laws, A. E. Truesdell, F. H. Thorp, G. C. Wales. After an evening of general sociability the class adjourned to Symphony Hall to see that the programme was properly carried out.—The Boston *Herald* of June 5 contains an illustration and description of the new Emmanuel House presented to the Church of the Ascension by Mrs. S. Reed Anthony:—

Kilham & Hopkins, architects, have planned a building in every way fitted for the purpose for which it is intended; and it is now in process of erection.

The Church of the Ascension is in the midst of a district filled mostly with tenement and lodging-houses.

[Hitherto the church has not had parish rooms other than those in the basement of the church, and much of the philanthropic work has been carried on in a hired house near the church.]

The new building will be on Newcomb Street, fifty yards from the corner of Washington Street, fairly quiet and very convenient, being almost opposite the side door of the church.

The new house, as planned, will have four stories and a basement. The principal feature of the lower portion will be the gymnasium, thirty by fifty feet in floor space, and extending in height through the basement and first story. Lockers and baths will fill up another large portion of the basement, leaving the remainder for the boiler and the coal. Shower-baths and tubs will be numerous. The gymnasium will be overlooked from the level of the first floor by a gallery,—a very valuable adjunct, as gymnasium classes will be able to give exhibitions of their work, to which visitors may be invited, and, when team matches are being played, friends of both sides can see the game.

The gymnasium space will take up about one-third of the street floor. Another large part of this floor will be occupied by the sloyd-room. In front of this will be a general boys' club-room, and near the entrance a smaller room, which will be used as an office by the clergy and parish visitors. But the office furniture can be moved to one end at pleasure and shut off by a

partition, and the room used in the evenings for smaller clubs of boys and young men. This feature illustrates a general principle in the building of this house, which is to make most of the rooms available for more than one purpose.

From the entrance on the first floor access will be had to the upper stories by stairway and elevator. The second floor will contain a large general room for women and girls, stretching across the front of the house, comfortable and well lighted, with a cheerful open fireplace at one end. Next to this will come smaller rooms for clubs and classes, and a kindergarten room in a sunny corner.

One room will contain the library, which is much used, especially by children, who take books out under the management and guidance of the parish visitor. This floor will also have a large kitchen equipped for the teaching of numerous classes in cooking and laundry work. There will be coat-rooms and toilet-rooms.

The third floor will contain a women's club-room of generous size, across the front of the building; a billiard-room, with space for two tables; an anteroom and a large assembly-room.

In the fourth story there will be a commodious housekeeping flat for the clergy.

It is hoped to have the building ready for use by November. The construction will be of brick, with fireproof staircase and an outside fire-escape. Various members of the congregation are showing their interest by contributions to the furnishing and equipment of the building.

—Hollis French, of the firm of Hollis French & Allen Hubbard, states that they are unusually busy this spring. "The most interesting work that we have on hand is the design of a large steam turbine generating station for the Fall River Electric Light Company, which is to be located on tide water, with dock, coal pocket, etc. The power will be transmitted through a new distributing system to a sub-station located in the centre of the city, where a large controlling switchboard will be placed."—Paul R. Hawkins, vice-president of the R. F. Hawkins Iron Works, Springfield, Mass., states that with the development of their business he has become more deeply concerned in the business end of the concern than in the engineering work. The most interesting piece of work that they are now engaged upon is the Chicopee-West Springfield Bridge,



7 spans of 180 feet each, and of which Professor Swain is the designing and consulting engineer.—Fred W. Ranno is the engineer of way and structures for the Southern Indiana Railway Company, with headquarters at Terre Haute, Ind.—James W. Cartwright is now superintendent of the Electric Light and Power, and Purchasing agent of the Bangor Railway and Electric Light Company, Bangor, Me.—Clarton W. Pike, of the Keller, Pike Company, Philadelphia, has been honored by election to the presidency of the Philadelphia branch of the American Institute of Electrical Engineers.

1890.

GEORGE L. GILMORE, *Sec.*, Lexington, Mass.

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Charles Neave is counsel for the General Electric Company in their law and patent departments, with office in New York.—Allen H. Rogers is interested in the Monterey Portland Cement Manufacturing Company, Ltd., now being organized in Mexico. Rogers has been located in that country since leaving Tech, as a mining engineer.—In regard to the notices sent out for the gathering the night of the “Pop” concert, only twenty-six men out of over one hundred and fifty notices that were sent out condescended to acknowledge receipt of said notice sent out by the secretary. As a result, eight of the faithful, with President Hayden, sat down to an informal dinner at the Algonquin Club, and afterwards drove to Symphony Hall, and attended the “Pop” concert in a body, a few others joining them here. Those present were as follows: J. E. Borden, J. B. Blood, H. M. Goodwin, C. Hayden, E. M. A. Machado, E. Robinson, C. W. Sherman, H. P. Spaulding, L. C. Wason, A. W. Woodman.—On April 15 William Lincoln Smith, of Concord, Mass., was married to Miss Mary McRuer Farnham, of Bangor, Me.—Schuyler Schieffelin was one of the ushers at the wedding of Miss Marion L. Whitaker and Mr. Joseph Earle Stevens in Grace Church, New York, on February 28.—Mr. and Mrs. George L. Gilmore passed the winter in Southern Europe and Sicily.

1891.

HOWARD C. FORBES, *Sec.*, 4 State Street, Boston, Mass.

In conformity with the plans of the Commencement Celebration Committee the fourteenth annual class dinner was held on Tuesday, June 6, 1905, at the University Club. After the dinner the class attended the "Pop" concert "Tech Night" in a body. Twenty-three men were present: Alley, Bird, Bowen, Boyd, Bradlee, Bradley, Bunker, Cunningham, Dana, Dart, Douglass, Forbes, Garrison, Goodwin, Jordan, A. N. Mansfield, C. B. Pratt, Tappan, Trowbridge, Vaillant, Wilder, Wilson, Young—From those who could not attend the dinner the following notes were received: Henry A. Fiske writes: "We move our entire office next week, so it will not be possible for me to leave here. I move the family June 10 to Crow Point for the summer. We are all fine, and hope your family are also. I am chairman of the Committee on Special Hazards and Fire Record of the National Fire Protection Association. This work consists in editing information on special hazards and manufacturing processes, and keeping records and tabulating fires in manufacturing and sprinklered risks, reports being sent to me from all parts of the United States and Canada. Regards to all the boys."—James Swan writes: "You may be sure that, if it were possible, I would be on hand at the dinner. I might manage it for a Saturday night, but it is usually hard for me to be away at any other time. Please give my kindest regards to all the boys, and with best wishes."—Henry T. Weed writes: "I am sorry I never can get around to the dinners. I have no 'news' to report, so everything must be O. K. with me. Remember me to the boys who do attend."—A. Forrest Shattuck writes: "I am sorry I can't be present. Best wishes to all. My department has recently moved into a new \$30,000 laboratory building, of fire-proof construction, built according to my plans. This is about all the news I can offer."—Stephen L. Coles writes: "Am proprietor of *Railway & Marine News*, the only publication of its kind on the Pacific coast, and am making my presence felt."—Barnard Capen writes: "My regards

and good wishes to all the boys. Wish I could see you all. Am here in Charleston, W. Va., taking treatment for my health,—lameness. Didn't we have a great time last year?"—Frederick C. Blanchard writes: "Have been at Fort Wayne a little over three years as production manager at the Electric Works. Have made a special study of production engineering and methods, endeavoring to keep the factory output up to and in harmony with the sales, prevent overstocking and accumulation of obsolete stock, and fighting everything, tools, rates, or men that tend to restrict production or increase costs. Have a pleasant home with plenty of 'breathing space' and a good golf club."—Charles W. Ricker has recently been appointed electrical superintendent of power stations of the Interborough Rapid Transit Company, 59th Street and Eleventh Avenue, New York City. In February he read a paper "On Rail Bonding" before the American Institute of Electrical Engineers.—George M. Warner desires to announce removal from 15 Cortlandt Street to 12 East 17th Street (between Broadway and Fifth Avenue),—electrical construction, repairs, manufacturing.—S. W. Wilder writes: "Expect next week to launch a 40-foot power boat (cruiser), designed by Burgess & Packard of Boston, and built by C. H. Curtis & Son, Ellsworth, Me., for use in waters from Mt. Desert to Rockland, Me. Intend to enter this boat in the Knickerbocker Yacht Club of New York ocean race from Newport to Marblehead, July 22. My boat to fly Eastern Yacht colors."—Gorham Dana is engaged to be married to Miss Edith Stedman, of Beacon Street, Boston.—Stephen Bowen is engaged to be married to Miss Emily Pratt, of Boston.—The marriage of Herbert S. Kimball and Miss Florence M. Phillips, of Boston, occurred on June 7, 1905.

1892.

PROF. WILLIAM A. JOHNSTON, *Sec.*, Mass. Inst. of Technology,  
Boston, Mass.

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The class held its annual dinner at the Copley Square Hotel June 6, the following members being present: Curtin, Derr, Du

Bois, Hutchinson, Ingraham, Johnston, Marcy, Metcalf, Park, Potter, and Wendell. The evening was thoroughly enjoyed by those present, and an adjournment was made to the "Pop" Con-cerr. It was the general opinion of those present at the dinner that the class ought to meet more frequently in an informal way, and an especial effort will be made to get the men together. The following officers were elected for the ensuing year: president, Leonard Met-calf; first vice-president, John A. Curtin; second vice-president, J. Scott Parrish; secretary-treasurer, William A. Johnston; assistant secretary-treasurer, Lewis P. Cody.

1893.

FREDERIC H. FAY, *Sec.*, 60 City Hall, Boston.

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The twelfth annual class meeting and dinner were held at Hotel Brunswick on the afternoon and evening of Commencement Day, Tuesday, June 6. During the afternoon, in accordance with the custom established in 1903, the class kept open house for members and friends. As many other classes were also holding spreads at the same hotel, the late afternoon saw much pleasant intermingling of the classes. At the business meeting, which was called to order at six o'clock by President Dawes, the election of officers for the ensuing year resulted as follows: president, Herbert N. Dawes; first vice-president, Leo W. Pickert; second vice-president, Henry A. Morss; secretary-treasurer, Frederic H. Fay; assistant secretary, Grosvenor T. Blood, the first four officers being re-elected. Announcement was made of the death during the year of the following members: Kilburn Smith Sweet, who died July 15, 1904; William Irving Hahn, July 22, 1904; George H. Thomas Lane, August 29, 1904; and Arthur Lewis Moore, May 15, 1905. At the conclusion of the business meeting a few minutes were pleasantly passed in greeting our guests, President Pritchett and Colonel Thomas L. Livermore. The class then adjourned to the adjoining room, where dinner was served to twenty-four. No formal speaking was included in the programme, but at the conclusion of the

dinner there was considerable general discussion engaged in by members and guests. The principal topic was the Philippine question, which came up very naturally through the presence of Hawley, who had just reached Boston on furlough from three years' service as supervisor of one of the island provinces. During the dinner, salary statistics were collected, the total number of men reporting being eighteen. Of these ten receive a salary or professional income of \$3,000 or over per year, three receive from \$2,000 to \$3,000, and five receive less than \$2,000. At nine o'clock the class adjourned in a body to the Pop Concert at Symphony Hall. Upon arrival there our guests were met by Major Henry L. Higginson, founder of the Symphony Orchestra, and Mr. Comee, assistant manager of the hall, who conducted them to the floor, escorted by the class under the big '93 banner, carried by Morss. The following members of the class attended the dinner: Baxter, Bemis, Blood, W. W. Carter, Crosby, Dawes, Glidden, Hawley, Hopewell, Johnson, A. L. Kendall, Keyes, Morss, W. B. Page, J. H. Reed, Reynolds, Soley, Spofford, Tomfohrde, Tucker, Whiston. Mr. F. H. Rand, bursar of the Institute, also attended the reunion as an adopted member. Other members present, in addition to those attending the dinner, were E. B. Carney, of Lowell, and Houck, of Buffalo, N.Y., who spent some time at headquarters during the afternoon, but were unable to dine with the class, and Biscoe and Sayward, who joined the delegation at the concert.—The *Outlook* is at present publishing in the first number of each month a series of papers by Biscoe upon church architecture. Each paper is appropriately illustrated by views from many churches in this and other countries, and is of great interest even to the layman, who knows but little of the technicalities of the profession. The thorough study which the author has made of the subject is evident throughout the series, and adds much weight to his criticism of many of the bad features so evident in American churches. The excellence of the papers, judged purely from the literary standpoint, need not be pointed out by us, the high standard of the *Outlook* being sufficient evidence of that.—W. W. Crosby has resigned as principal of the Lowell Textile School to take the position of

assistant treasurer of the Brighton Mills, of Paterson, N.J. The New York office of this company is at 83 Leonard Street.—W. G. Houck came on from Buffalo for Commencement to be present at the graduation of his brother, Carl A. Houck, who, like himself, took the course in civil engineering.—L. S. James is a member of the executive committee of the newly formed New England section of the Society of Chemical Industry, representing the light, heat, and fuel interests.—H. A. Morss, vice-commodore of the Corinthian Yacht Club, has been arranging another ocean yacht race, this year's course being from Marblehead to Halifax.—Charles L. Norton has been promoted from assistant professor to associate professor of heat measurements at the Institute.—L. W. Pickert has resigned his position as chemist for the American Sugar Refining Company of Boston to become associated in business with his father in the L. Pickert Fish Company, New Street, East Boston. This company has large canning interests at East Boston and Provincetown, Mass., Boothbay Harbor, Me., and Bras D'Or and Cow Bay, Cape Breton.—Charles M. Spofford has resigned his position of assistant professor of civil engineering at the Institute to become professor in charge of the civil engineering department of the Brooklyn Polytechnic Institute. After a number of months of post-graduate study at the Institute in 1893-94, and some years of active work, principally with the Phoenix Bridge Company, Spofford came to the Institute as instructor in the fall of 1896, and was made assistant professor in 1903. During this time he has engaged in considerable outside practice, and for some years he has been connected with the engineering department of the city of Boston. From 1898 to 1905 he was assistant secretary of the class, and his work for '93 and the alumni at large has been invaluable. To his efforts was due in large measure the success of the class subscription to the Walker Memorial Gymnasium, and during the past year he has ably served the Institute and the alumni as a member of the Income Fund Committee. While his departure from Boston will be deeply regretted, his many friends join in wishing him success in the larger position he is about to enter.

1894.

PROF. S. C. PRESCOTT, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

The annual dinner of the class was held on Commencement evening, Tuesday, June 6, at the Hotel Nottingham. The attendance this year was very small, the following men being present: McKibben, H. W. Gardner, Piper, Phelan, W. B. Parker, W. H. Pratt, Sayward, Tenney, Lanigan, Claflin, and Prescott. The class had as guests Professor Burton, the Dean of the Institute, and Mr. W. Lyman Underwood, who will be remembered as the naturalist who so charmingly entertained us at a class dinner two or three years ago. After the dinner the class attended the "Pop." The secretary wishes to thank the members of the class for their prompt and generous aid in removing the various deficits. The assessment of \$25.80 due the Association of Class Secretaries has been paid, as have also practically all other outstanding bills, so that we may regard ourselves as solvent. The secretary still has on hand a large number of copies of the decennial catalogue. Any member of the class desiring extra copies may have them by paying the postage or express charges.—Claflin has been elected secretary of the newly formed section of the Society of Chemical Industry, which has its headquarters in Boston. In company with a few other members Claflin is attending to the annual meeting of the society, which occurs in London in July.—Moore has been appointed assistant State inspector of gas.—M. S. Chace is having a busy but enjoyable year in Japan as technical adviser of the Kawasaki Dockyard Company. It is believed that his position is one directly connected with the Japanese navy, and many of his old friends here are wondering to what extent the repairs of Russian battleships taken by Japan fall under Chace's supervision. One of the Boston papers recently published Chace's picture and gave an account of his work and career.—Batcheller has been spending several months in Boston, working upon some research work in mining engineering with Professor Richards at the Institute. He finds the combination of farming and consulting mining practice a very agreeable one.—

H. A. Swanton has designed a new engine of small size which promises to be of great practical value, and expects to devote his time in future to the building and sale of these machines.—Haven was recently appointed Assistant Professor of Mechanical Engineering. This makes the fourth '94 man to join the Institute Faculty.—News is occasionally received from Robeson, who is general consulting engineer of the diamond mines at Johannesburg, South Africa, and who has sent one of his principal assistants to study electrical engineering at Tech.—Bowles wrote recently that a meeting of Tech men has been held at Seattle, and there was a possibility of forming a Technology Club there. He is at present to be addressed at 35 First Street, Portland, Ore.—King writes that he is engaged, and that we may look for a wedding the last of June. At present he is with the Law Department of the city of New York, in the office of the Corporation Counsel, 2 Tryon Row.—Paessler is principal of the Barlow School of Industrial Arts, Binghamton, N.Y.—John B. Gough, who was a special student in Course VI. for two years, died at Bishop, Cal., on April 28. He was formerly connected with the city engineer's office at Providence, R.I.—H. S. Reynolds, who for four years has managed the Stone & Webster interests in Columbus, Ga., has resigned to accept a position in the operating department of J. G. White & Co., engineers and contractors, 43 Exchange Place, New York City.

1895.

WILLIAM T. HALL, *Sec.*, Mass. Inst. of Technology, Boston, Mass.

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The following men were present at the alumni reception on June 2: Barrows, Berry, Bourne, Dean, Hall, Hurd, Jackson, Lawrence, Loring, and Miller. Our class presented the infant '05 with a baby carriage. On June 6 the class had its decennial dinner at the American House, and it proved one of the most enjoyable dinners that the class has ever had. Badger, Barrows, Bourne, E. Clapp, G. Clapp, G. A. Cutter, Eveleth, Faxon, Foster, A. D. Fuller, Hall, Hannah, Haven, Hayden, Hurd, Jackson, Jones, Kotschmar, Law-



rence, Loring, Newell, Phemister, Richards, G. Shepard, Walworth, Watkins, Weston, Winkley, and Woods were present. At eight o'clock the class went in a body to the "Pop," where we were joined by George Defren. Our class had one of the largest gatherings of the evening, as well as one of the most enthusiastic. The following clipping from the *Boston Record* tells the same story:—

The class of '95 had by all odds the most effective yell, which so closely resembled a siren whistle that during the moments of execution the strains of the orchestra were lost to hearing.

The work on the class book is progressing well, and each man may expect to receive a copy some time during the early fall. Meanwhile the secretary would be glad to hear from the men who have not replied as yet to the circular. At the class dinner it was voted to devote a sum not to exceed \$100 towards the further restoration of the Huntington Hall frieze. We have also been assessed twenty cents per man as our fifth-year contribution to the Association of Class Secretaries. If the men who have failed to contribute as yet will put their hands into their pocket-books, we shall be able to meet the unusual expenses of this our decennial year without difficulty.—W. J. Drisko has been made an assistant professor of physics at the Institute, a well-deserved promotion.—S. K. Clapp's address is now 876 Federal Building, Chicago, Ill.—B. C. Donham sailed from New York on February 21, *en route* to Seoul, Korea, where, as chief engineer for Colbrann & Bostwick, he will build a system of water-works for the capital city, Seoul. He has been in this vicinity since last August, at that time returning from a five years' stay in Korea, where he has been engaged in building electric railways, highways, and other improvements. During that time he also made the designs for the water system, which he is now to build. He will stop in London and upon the Continent for several weeks, and then proceed by way of Genoa and Suez, arriving in Seoul early this summer. He is accompanied by his wife and a most vigorous young man, who at the early age of one year has been nearly around the world.—H. K. Barrows reports that work is developing rapidly along hydrographic lines here in New England. The Hydrographic

Branch of the United States Geological Survey (the New England district of which is under his charge) is making measurements of flow of many of the principal rivers, and also surveys and plans to further industrial development in the way of water powers, etc. The district office is now at 6 Beacon Street, Boston, and he will gladly welcome any Tech men there, whether or not interested along these lines of engineering.—F. E. Matthes will join the instructing force at the Institute next fall, and will teach topographical engineering.—Willard H. Watkins reports the birth of Barbara H. on June 16.

1896.

EDWARD S. MANSFIELD, *Sec.*, 70 State Street, Boston, Mass.

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The ninth annual alumni meeting of the class was held at the Hotel Nottingham on Copley Square, Tuesday evening, June 6, at 6 P.M., about fifteen members being present. The record of the last meeting was read by the secretary, and the financial statement submitted. An election by written ballot resulted in the election of Edward S. Mansfield for secretary, and Dr. J. Arnold Rockwell for assistant secretary for the ensuing year. A plan for a decennial celebration and reunion in 1906 was discussed at length, and a committee, consisting of Gilman, Hersey, Hultman, Rockwell, and Mansfield, was appointed to complete arrangements for such a reunion. It was also voted to publish a class register in 1906, and to levy an assessment of \$3 on each member, to cover general expenses for the years 1906-08, and also the extra expense of publishing the catalogue. After the meeting the class adjourned to the dining-room, and, just before eight o'clock, marched up to Symphony Hall, where other members of the class were added to join in the '96 cheers.—E. C. Jacobs, professor of chemistry in the University of Vermont, was married, on June 22, to Miss Mabel Nelson, of Burlington, Vt. Mr. and Mrs. Jacobs, after taking an extended tour through Canada, the White Mountains, and Mr. Jacobs's former home in Malden, Mass., will settle in Burlington, Vt., where they will be at home after October 1 at 28 Brooks Ave-

nue.—F. A. Thanisch, on account of ill-health, has been obliged to leave his position with the United States government as mineralogical expert in the Philippines, and at present is located at his home in Jamaica Plain.—C. E. Locke left Boston on June 6 with the Metallurgical Summer School, for a three weeks' trip, covering Perth Amboy, Baltimore, and Pittsburg.—Charles S. Newhall, of Ouray, Col., visited his home in Lynn, Mass., on a wedding tour early in March; and, under date of April 9, from Colorado, he writes as follows: "I am getting along with my work here very successfully, but am seriously handicapped at present by the vast amount of snow in the mountains. The Camp Bird, Limited, has leased sixty-four claims from the Imogene Basin Development Company, and I am looking after the development of the property for the Camp Bird, Limited, and the committee in charge. The properties under development lie between the Camp Bird and the Tom Boy groups."—E. S. Mansfield was married to Miss Elizabeth O. Bancroft on Wednesday evening, June 14, at the First Unitarian Church, Peabody, Mass. Frederic W. Fuller was one of the ushers. After a brief tour they returned to Boston about the middle of July.—At the commencement of George Washington University at Washington, D.C., on May 29, 1905, the degree of Doctor of Philosophy was conferred upon Henry A. Pressey.

1897.

JOHN A. COLLINS, Jr., 74 Saunders Street, Lawrence, Mass.

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Wilfred Bancroft was married on June 3 to Miss Elizabeth Fields, of Wilmington, Del. They will live at 3303 Hamilton Street, Philadelphia, Pa.—Donald Campbell was married on June 22 to Elizabeth May Young, of Spokane, Wash. Campbell is located in Butte, Mont.—At the time of the Commencement exercises the secretary was unable to get away from business or to get the time to give to making arrangements for a class dinner or reunion. He made several efforts to get members of the class living in Boston to arrange for such an affair, but they were all too busy.

It is to be regretted that '97 had no celebration of any kind, but under the existing circumstances it was unavoidable.—L. L. Gaillard, formerly electrical superintendent with the Interborough Rapid Transit Company of New York, is now with the Engineering Department of Consolidated Railway Company, New York.

1898.

PROF. C.-E. A. WINSLOW, *Sec.*, Mass. Inst. of Technology, Boston.

'98 held its annual spread and dinner at the Brunswick on Commencement Day, June 6, with all the usual accompaniments, and not even its quinquennial of '01 was more successful. H. W. Jones from St. Louis, F. H. Jones from Rochester, Long from Wilkesbarre, Danforth from Pittsburg, and Bleecker, till recently of Houghton, Mich., were welcome prodigals from outside the State. Major John Bigelow was the guest of honor, and was elected the first honorary member of the class at the close of the dinner. Thirty men sat down to table, as follows: Major Bigelow, Coburn, Danforth, Russ, Curtis, Roberts, M. V. Ayres, Bragg, Daly, Butcher, H. W. Jones, F. H. Jones, Kendall, Bennink, Wesson, C. H. Smith, Long, Goodrich, Sullivan, Keene, Richmond, Godfrey, Dawes, Coombs, Kimball, Clifford, Shedd, J. T. Robinson, and Winslow. Others at the spread or at the "Pop" were Snelling, Sherman, Bleecker, Butterworth, Coffin, Cox, and Thompson. Marriages during the year are announced as follows: A. H. Cox to Miss Katherine G. Abbot, July 23, 1904; A. W. Shaw to Miss Abigail Winslow Hopkins, July 27, 1904; J. D. Underwood to Miss Sophie G. Kerr, September 6, 1904; W. Brewster to Miss Mary Southgate, October 1, 1904; S. A. Hooker to Miss Alice Louise Brown, Nov. 23, 1904. Anti-race-suicide statistics read at the dinner indicate at least eighteen members of M. I. T., '26. Jacoby has a son, Paul Kester, born Oct. 22, 1904; Conklin has a daughter, Marjorie Lester; and Sturtevant, a son, born March 20. A. A. Packard, Jr., was born Sept. 14, 1904. Benson has a daughter, Dorothea, born June 9, 1904 (alumni dinner night); A. L. Davis has a son, born July 30,

1904; and Ritchie, a daughter, born Aug. 7, 1904. Helen Chapin Allyn was born Aug. 5, 1904; George Randie Wadsworth, March 21, 1905; Mary Clifton Matthews, Nov. 14, 1904; Elizabeth Howe Fenner, Dec. 20, 1904; and Claire Pfahler Long, Jan. 15, 1904. Russ, Huntington, and Churchill have sons born respectively Sept. 22, 1904, April 13, 1905, and Jan. 5, 1905. Butcher and Peavey have daughters born April 30, 1905, and May 24, 1905; and B. A. Adams has a daughter, Margaret Humphrey, born Oct. 27, 1904.—Strickland and Wadsworth have both left the New York Central, to join the J. G. White Company, Ltd., a large engineering and contracting firm at 43-49 Exchange Place, New York.—J. R. Allen has left Carrière & Hastings to take a position with John Russell Pope at 1133 Broadway, N.Y.—C. W. Wilder is now with the New York City Interborough Railway Company in Park Row Building, New York, and his home address is 91 Pineapple Street, Brooklyn.—Fenner has recently left Bethlehem, Pa., to enter the employ of the Saylesville Bleacheries at Saylesville, R.I.—Allyn is now treasurer of Company F, 7th Regiment, N. G. N. Y., as well as a member of the Board of Governors of the Technology Club of New York.—Weimer was elected mayor of Lebanon, Pa., at the city election on April 4, 1905, going into office with the most enthusiastic indorsements of the local press.—Edgerly was promoted January 1 from superintendent at the College Point factory of the Chilton Paint Company to be manager of the Technical Paint Department, with headquarters at 69 Cortlandt Street, New York City.—Winslow was promoted in May to be Assistant Professor of Biology at the Institute. He has recently been elected a member of the corporation of the Church of the Advent, Boston, and a counsellor of the American Statistical Association.—J. D. Underwood is now assistant engineer of the Bureau of Water, Pittsburg, Pa. His address is 234 North Craig Street, that city.—Five '98 men are among the special lecturers at the Institute: Coburn on Steam Auxiliaries, Cox on Architectural Design, Packard on Yacht Designing, Ulmer on Sugar, and W. L. Underwood on Sanitation.—Lansingh is now general manager of the Holophane Glass Company, with an office at 227 Fulton Street, New York.—N. D. Benson has left

the Boston Bridge Works to take a position at Brooklyn with the American Bridge Company. His address is Beaufort Street, Richmond Hill, New York.—M. E. Taylor is now draughting in the Ordnance Bureau of the War Department. His address is changed to 1322 Whitney Avenue, Washington.—Collins has become general manager of the Rock Hill Mines Company, and his address is Hotel Vendome, Leadville, Col.—Matthews opened, May 1, an office in Knoxville, Tenn., as a member of the firm of Matthews & Browne in the French & Roberts Building.—J. T. Robinson has abandoned the automobile business, his duties as president of the John T. Robinson Company, makers of paper box machinery, occupying his entire time.—Bleecker has returned to the East, and accepted an appointment as acting manager of the Blue Hill Street Railway Company, with headquarters at Canton, Mass.—Packard is engaged with his partner, W. Starling Burgess, on the construction of a large yacht building plant in Marblehead.—Churchill is now a partner in the firm of Churchill & Spaulding, manufacturers of heavy steel work, at 464-478 Carroll Avenue, Chicago.—Brooks has been appointed resident engineer of the Canadian Pacific Railway at Alliston, Ont.—Doty, in addition to his duties as cashier of the Merchants' National Bank of Santa Monica, Cal., is secretary of the Home Telephone Company and treasurer of the city of Santa Monica.—Dater is now engaged for the New York State Engineers' Office on the canalization of the Mohawk River and its control by movable dams. His home address is 116 Lancaster Street, his office address, care Barge Canal, DeGraaf Building, both Albany, N.Y. He has recently been elected an associate member of the American Society of Civil Engineers.—Lane has moved to New York, where he is employed in the New York Central & Hudson River Railroad office, Room 500, Grand Central Station.—In the various alumni associations '98 has a fairly prominent place. Winslow is a member of the Executive Committee of the general organization. Allyn is a member of the Board of Governors, and Sargent chairman of the House Committee, of the Technology Club of New York; Danforth, secretary and treasurer of the Pittsburg Association; Tietig, a member of the Executive Committee of the

M. I. T. Club of Cincinnati; and C. F. Wing, secretary-treasurer of the Technology Club of New Bedford.—Campbell was married on the 22d of June to Miss Elizabeth Young, of Spokane.—Treat wrote as follows to the secretary on June 5: "Yours received. I am sorry I cannot come to Boston, and be with you. I met with a severe auto accident last week, smashing up my right hand and crushing off the two middle fingers of the hand. Am doing nicely, however. I guess those two fingers were too long, anyway. Welcome Major Bigelow with a grand old '98 yell, and drink deep in the mug to his health. My regards and best wishes to all the boys. Excuse writing. I have to use left hand, and am not yet on to my job."

1899.

DR. MILES S. SHERRILL, *Sec.*, Mass. Inst. of Technology, Boston.

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The annual dinner and meeting of the class was held on the evening of Commencement, July 6, at the Copley Square Hotel, at 6 P.M. Fifteen men were present,—Barry, Bender, Clapp, Fowle, Loud, Moore, Phelps, M. S. Richmond, Rickards, Sawtelle, Skinner, Stetson, Swan, Whitney, and Witherell. The resignation of B. E. Morse, the vice-secretary of the class, was presented at this time, and was accepted with regret. C. M. Swan was elected to the vacancy. M. S. Richmond, H. J. Skinner, and P. W. Witherell were elected to the advisory council for the ensuing year. At eight o'clock the class adjourned to Symphony Hall, to join in the celebration of Tech night at the "Pop." Here its numbers were re-enforced by the addition of Eaton, Emerson, Hammond, Holliday, MacBride, and Matheson. After the close of a strenuous evening the class marched down to Rogers steps, there to indulge in a final cheer with the class of '05. During the afternoon of Commencement Day the class, in conjunction with the classes of '00 and '01, kept open house at the Brunswick, where light refreshments were served. Despite the rainy weather a goodly number attended, and a most social afternoon was passed, the presence of the ladies contributing much toward the success.

of the occasion.—Three weddings in the class are to be recorded at this time. That of Mr. Lane Johnson and Miss Marie Emilie Jones took place on April 26 at Kansas City, Mo. Another occurred at Westfield, N.J., on May 20, when Miss Emma Marion Starr became the bride of Mr. Bassett Jones, Jr. The third, that of Mr. George H. Perkins and Miss Eva Sherman Raymond, was celebrated on June 14 at Salem, Mass.—W. B. Flynn has left the Interborough Rapid Transit Company of New York, to take a position with L. B. Stillwell, consulting engineer, on the new work of the Hudson Companies. This company is building the four tunnels under the Hudson River and the subways in Jersey City and up Sixth Avenue in New York City. It represents about twenty miles of tubes and subways. Flynn's address is 1939 Park Row Building, New York City.—J. L. Tufts has accepted the position of assistant director of the Industrial Laboratories for Chemical Research and Analysis, New York City.—F. Minot Blake has recently become connected with the Phoenix Insurance Company of Hartford, as general inspector. For the next year or two his headquarters will be in Cincinnati.—W. A. Kingman has severed his connection with the Viscoloid Company of Leominster, Mass., and is now located in Woodbury, N.J. He is engaged in doing analytical and research work on high explosives for the du Pont Powder Works.—W. Malcolm Corse is the proud father of a little daughter, Margaret B. Corse.—Edwin F. Samuels received the degree of Bachelor of Laws at the recent Commencement of George Washington University, Washington, D.C.—The class is deeply grieved to hear of the death of Edward William Axson. The following account is taken from the *Princeton Alumni Weekly*:—

Edward William Axson, '97, his wife and only child, a son two years old, were drowned in the Etawah River, near Creighton, Ga., on April 26. They had just started on a drive with two horses and a two-seated carriage, Mr. Axson driving, Mrs. Axson and the boy being in the back seat. As they approached a ferry, the horses became frightened, and dashed down a steep embankment, crossed the ferry-boat (which was anchored to the shore), and plunged into the stream. In the struggle in the swift current, Mr. Axson, who was a good swimmer, managed to get free of the carriage and hold



up Mrs. Axson and the child for some time. The only witnesses of the accident were two men on the opposite shore, who were unable to swim. They crossed the river by a bridge near by, and tried to get the ferry-boat out into the stream, but, before they could do so, Mr. Axson's strength gave out.

The funeral was held at the Princeton Cemetery on Saturday afternoon, the 29th, eighteen classmates of Mr. Axson being the pall-bearers. He was a brother of Professor Stockton Axson and of Mrs. Woodrow Wilson.

After graduation, eight years ago, with both general and special honors, Mr. Axson continued his studies for two years at Princeton and the Massachusetts Institute of Technology. In 1900 he was Assistant in Mineralogy at Princeton, and then went to Tennessee as head chemist for the Buffalo Iron Company. At the time of his death he was superintendent for the Franklin Gold Mining Company, Creighton, Ga. Mr. Axson and Miss Florence Choate Leach were married on April 9, 1901, at Cambridge, Mass. Their only child, Edward Stockton Axson, was born June 2, 1903, at Man-  
nie, Tenn.

Although Mr. Axson was connected with the class for only one year, yet those who had the privilege of associating with him have ever been grateful for the influence of his splendid personality. The following resolutions have been drawn up by the Executive Committee of the class, in accordance with a vote passed at the annual meeting of the class on June 6:—

Whereas it has seemed wise to God to remove from our midst our beloved friend and classmate, Edward William Axson; and

Whereas we mourn the loss, in the beginning of a promising career, of one who had ever endeared himself to the hearts of all who knew him, —therefore, be it

*Resolved*, That we, the members of the class of 1899 of the Massachusetts Institute of Technology, hereby express our appreciation of his high and noble character and our deep sorrow for his untimely death, and that we extend to his bereaved family our most heartfelt sympathy; and be it further

*Resolved*, That these resolutions be spread upon the records of the class, that a copy be sent to the family of the deceased, and that they be published in the TECHNOLOGY REVIEW.

1900.

R. WASTCOAT, *Sec.*, Dedham, Mass.

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The new secretary makes his bow as a reporter with fear and trembling; for the highest mark he ever received in English composition was an "L," and, as for five-page themes, the same holds good, even when he used the coarsest stub pen to be found in Boston. As there has been very little time since the class dinner and election for the gathering of news, the items of interest must, of necessity, centre around the Hub. To go back to last year, it is only necessary to say that the "glorious reunion" was apparently the awakening of new interest in our class affairs among the members. But we must not stop here, for it is now or never; and let us all hang together, and put our class in the front, even if the "darkest days" are apparently upon us. But we would not be true sons of our Alma Mater if we sit down and do nothing when there is so much to be done. The secretary trusts and hopes that all our members will support and aid the present officers in their efforts to put our class organization on an active working basis, but we must remember that five men cannot be a success in themselves. They must have the support and encouragement of all. One's class will be active in just so far as one helps to make it active. The events leading up to the class dinner were covered in the circular letter sent out with the constitution, etc. At the dinner at the Westminster Hotel on Tuesday evening, June 6, the following men were present: Burns, Cutting, Everett, L. B. Jennings, Stearns, Wastcoat, Course I.; Burnham, Dunbar, Graff, Keay, Maxfield, Osgood, L. S. Smith, Warren, Course II.; Katelle, Course IV.; McCrudden, Course V.; Draper, Course IX.; Fitch, Chalmers, Course X. The business meeting followed the dinner, Fitch being chosen chairman. The vote on the constitution as amended showed 51 in favor, 4 against; and reasons given for voting against were objections to the annual election of officers. The nominating committee, consisting of Brown, J. W., Chalmers, and Weeden, announced the result of the election, as follows: Wastcoat, secre-

tary; Stearns, vice-secretary; H. E. Osgood, Draper, and Walworth, executive committee. The nominating committee for the following year consists of Kattelle, Keay, and Everett. After the meeting the class adjourned to the "Pops," where the red shipping tags, with the numerals 1900 printed on them, and siren whistles made every one present aware that we were in the neighborhood. At the reception to the graduating class, the Friday evening before, eight 1900 men were present, and we all agreed that five years' time had made a wonderful development in bringing out the true Tech spirit; for the hearty singing of Tech songs by the graduating class made us feel that we had missed something in our college life. On the afternoon of June 6 we united with '99 and '01 in holding open house at the Brunswick. This feature of holding open house is being adopted by all the classes, and bids fair to become a most important and pleasant feature. In regard to future events it is proposed this next year to have a series of informal dinners at least once a month, due notice of which will be sent to all members. Meanwhile the most important work is to get in touch with all the men and straighten out the class lists, and in this work it is necessary that members reply to notices sent out. Of over 300 notices sent out this spring, the secretary received just 61 replies.—The class members are not hesitating to accept the responsibilities of married life, for the secretary has received the following announcements: Daniel Ellwood Maxfield married to Katherine, daughter of Mr. and Mrs. Henry D'Olier, April 24, 1905, at St. Matthews Church, Philadelphia. Maxfield is employed at the new Sturtevant Plant at Hyde Park, and is living at 18 Fenelon Street, Dorchester.—Thomas Edward Penard married to Sabrina Parker, daughter of Mrs. Alonzo Grant, June 12, 1905, at Everett, Mass. At home after September 1, at 32 Irving Street.—On April 13, 1905, born to Mr. and Mrs. Arthur B. White, a daughter, Meriel Burr White.—On June 9, 1905, born to Dr. and Mrs. John W. Brown, a son, John Wesley Brown. Congratulations to all, and may we have many chances to offer them again in the future. No race suicide for 1900. Brown is living at 55 Kenwood Road, Roxbury, and has charge of a course in theoretical

chemistry at the Institute.—White is living in Riverside, Cal., and is conducting a general engineering office. He has an orange grove on his “plantation,” and to hear him tell how he picks oranges right from the tree makes us poor Eastern fellows, who are subject to forty degrees’ change of temperature in eighteen hours, wish that we could raid his place some dark night.—H. S. Conant, VII., is taking a course of study in the Harvard Divinity School.—Cyrus Corliss, VI., for the past five years with the Boston Elevated, is first assistant to the electrical engineer of that road. Corliss still lives in Randolph, and is organist and choir-master in the First Congregational Church in that town.—Merrill, II., of the Department of Commerce and Labor, writes from Washington, as follows: “It seems to me that our class has been worse than a nonentity in all graduate affairs. We should stand high in alumni doings. With the right officers our men will hang together as well as the class of ’93. Get somebody to fill up the REVIEW with class items every number. It’s a great disappointment to find so few items from our class. Here’s hoping for an upward turn in the affairs of the class of naughty-naught.”—Chase writes that he has just got in after a trip over the line, too late to vote, and hopes that the class will have more representation in the Tech work, and that we had a pleasant reunion. Chase is chief draughtsman with the Minneapolis & St. Louis Railroad, and is located in Minneapolis.—Brooks writes from New York, as follows: “You will note that I have become wealthy enough to retire from railroading, after a long service on the Burlington road, and am now handling the locomotive and sales department for this company, east of Pittsburg. My employer told me, ‘If you travel enough to make a success of this business, you will neglect your home, and your wife would be unhappy, therefore better not get married’; and there is no present indication of the same. I am sorry that I will not be able to join the boys on June 6. Please remember me to the crowd.” Brooks is with the Railway Appliances Company.—Perry, from Grand Rapids, Mich., is evidently enjoying life, for he says: “I am very glad to see that something is doing in the class. It is high time. I am very sorry that I cannot mix up more in class

matters, but ultimately hope to settle in New England. My best wishes for a fine five-year reunion this June. I cannot give any special news about myself, as none exists; and I haven't time to manufacture any. I am plugging along in the same old way as when you knew me, but can tell you that, until a man has a home of his own, he doesn't know half the pleasure of living. My congratulations to Maxfield on his new wife. [Wonder if he had an old one. Sec.] Please remember me to the fellows at the reunion." Brooks doesn't know what he is missing.—Hopkins, with Charles A. Chapman, consulting engineer in Chicago, wants more 1900 men to show up there at their monthly dinners; for he says: "I am glad to see this move on the part of you fellows down in Boston. I hope you will be able to get the class waked up a bit. I think it needs it, at least I judge so from the attendance of '1900' men at our monthly dinners out here. It is the general rule that I am the only 1900 man present, but at the last dinner last week Leonard and Hall were there. I was somewhat surprised to see how few fellows paid their annual dues. It strikes me it doesn't speak very well for the business abilities of the members of the class if they can't raise the price of a dollar once a year or so."—Dean, W. C., VI., located at the Norfolk Yard, writes: "I hope there will be sufficient interest instilled at this time into the officers of the class that we wanderers will be kept informed of the class doings. The REVIEW should have a two or three page article each time. I should like to see a Course VI. man taken into the political ring once." Course VI. men are evidently among the missing, for none showed up at the reunion; but it is hoped that we shall be able to find some somewhere.—Vogel, I., located with the Lackawanna Steel Company at Buffalo as consulting engineer, finds life in that region of a strenuous nature; for the plant runs seven days a week, and it keeps him on the jump.—William I. Wyman received the degree of Master of Patent Laws at the recent commencement of George Washington University, Washington, D.C.—According to the *Columbus Dispatch* of May 9, 1905, Harrison Everett Ashley, graduate student in the Ohio State University, was elected a member of Sigma Xi., a scholarship organization for engineers

similar to Phi Beta Kappa.—Mr. and Mrs. Augustus Russell Street Foote, of Washington, D.C., announced the engagement of their daughter, Leila Johnson, to Mr. Francis Elmore Cady during the spring.

1901.

EDWARD B. BELCHER, *Sec.*, Malden, Mass.

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The annual dinner and election of officers was held at the Nottingham, June 6, at 6.30 P.M. The reports of the secretary-treasurer, Tech Fund Committee, and the Nominating Committee, were read and accepted. The election of officers resulted as follows: president, Ellis F. Lawrence; first vice-president, C. F. F. Campbell; second vice-president, R. H. Stearns; Executive Committee, L. P. Wood, W. W. St. Clair; secretary-treasurer, E. B. Belcher; assistant secretary-treasurer, R. L. Williams. Fourteen members of the class were present, including P. W. Moore from Chicago and L. B. Wilder from Vernal, Utah.—E. F. Lawrence sailed June 7 for Paris, where he is to spend six months studying architecture.—Married on June 16 A. C. Hayden and Florence Ketcham at Brooklyn, N.Y.—Married on June 8 Robert S. Littlefield and Miss Comstock at West Medford, Mass.—The secretary is also informed of the marriage of J. A. Trott and Miss Grace Lindsley Willard, which occurred early in the year.—William Whipple was married on June 1, 1905, to Miss Genevieve S. Randolph at Bayou Goula, La. Mr. Whipple is superintendent of the Sinclair Central Factory, one of the largest and best equipped sugar factories in the United States.—Howard T. Chandler is working for the Bureau of Filtration, 1017 Frick Building, Pittsburg, Pa.—Robert Andrew is with the Electric Railway Equipment Company, Cincinnati, Ohio.—C. J. Bacon is engineer of tests at the power plant of the Interborough Traction Company, New York.—R. H. Bolster is with the United States Geological Survey, Washington, D.C.—Charles M. Butters is civil engineer at the Canal Zone, Colon, Panama.—Alonzo Isham is employed by the Clifton Motor Works, Cincinnati, Ohio.—E. H. Green is at Hacienda de

Tula, Vera Cruz, Mex.—D. G. Jillson, 1424 North Delaware Street, Indianapolis, Ind.—R. C. Robinson, Providence Engineering Works, Providence, R.I.—F. C. Lindsey, 1625 Connecticut Avenue, Washington, D.C.—Ralph Whitman is working for the Panama Canal Commission at Washington, D.C.

1902.

C. W. KELLOGG, Jr., *Sec.*, Edison Electric Illuminating Company, Brockton, Mass.

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The Triennial Celebration was held at the alumni reunion in June, and consisted of a dinner at the Westminster and participation in Tech Night at the "Pops." The following twenty-eight men were present on that occasion: Hooker, W. J. and C. G. Mixer, Fisher, Kellogg, Morrill, B. G. Philbrick, Boardman, Friend, E. S. Baker, Ballard, Manning, Pope, Saylor, Marvin, Ritchie, Stillings, Nickerson, Belcher, Miller, S. A. Gardner, Jr., Patch, Coburn, Whittet, Davis, Crowell, E. E. Nelson, and Thurston. The official proceedings of the dinner were somewhat informal and abbreviated, but the members succeeded in concentrating their minds long enough to elect the following officers for the ensuing year: president, C. G. Mixer; first vice-president, H. K. Hooker; second vice-president, S. A. Gardner, Jr.; secretary, C. W. Kellogg, Jr. The meeting broke up before an assistant secretary could be elected. The average class salary figured up \$1,200. Such financial prosperity should certainly be conducive to matrimony, and the class has shown up quite well in this regard since the last issue of the REVIEW.—Hervey was married on April 21, 1904, in Schenectady, N.Y., but neglected to give his wife's maiden name. His address is now P.O. Box 1023, that city.—Pitts was married on June 22, 1904, to Mabelle T. Shipp, of Dorchester, Mass.—Hall reported only recently his marriage to a German lady in Berlin on Aug. 15, 1903. Mrs. Hall was Fräulein Caritas Fuhrmann.—Ballard was married last year in May to Miss Ellen Whelpley, of Washington, D.C. Last February they were blessed with a daughter, named Mary Ellen.—

Randall married Miss Edith Maude Stetson, of Dorchester, Mass., on April 15 this year. They are now at home at 34 Moultrie Street, Dorchester.—Patch was married June 14, 1905, to Miss Nellie Iva Keene at Stoneham, Mass. They will be at home after September 1 at 44 Bigelow Street, Quincy, Mass.—Gannett married on the same day Miss Janet Rand Sanders, of Haverhill, Mass.—Driscoll, news of whose marriage on Feb. 3, 1904, to Martha Elizabeth Melchert, of Roxbury, Mass., has just reached the secretary, has broken all class records to date by the arrival of twins, both girls, on Dec. 30, 1904. They are both in good health at this writing, and are named Margaret Nichols and Katherine Coulter.—A few changes in address and occupation have reached the secretary. Davis is now at 41 Upton Street, Boston, Mass.—Durbin is with the engineering department of the Western Electric Company, New York.—Howe is with the Missouri & Kansas Telephone Company, Kansas City, Mo.—Hunter, 233 Temple Street, Roxbury, Mass.—Brainerd, 62 Ashland Street, East Orange, N.J.—Marvin is now with W. T. Bonner Company of Boston.—Fletcher is now with the New York & New Haven at Danbury, Conn.—A. A. Jackson has gone to Chicago as chemist and inspector with the Rock Island Railway Company.—Coburn's address is 11 Greenleaf Street, Malden, Mass.—Burdick's, 155 Kenyon Street, Hartford, Conn.—Crowell, Box 393, Foxboro, Mass.—J. H. Brown, care New York and New Jersey Telephone Company, Brooklyn, N.Y.—Stillings, 16 Davis Avenue, Brookline, Mass.—It is a sad duty to announce the death of Henry A. Ferrin, which occurred at his home, 1515 Middlesex Street, Lowell, Mass., on March 22, 1905. He leaves a wife and mother.—Circular letters returned show that the secretary does not know the correct addresses of the following men, and any information concerning them will be gratefully received by him: I. Williams, Wadleigh, Foote, Gallagher, Gates, Simpson, A. E. Hansen, A. E. Nash, J. L. Jones, G. H. French, Edwards, Lane, Bates, Lawson, Egan and Blanchard.



1903.

WALTER H. ADAMS, *Sec.*, 22 Dix Street, Winchester, Mass.

At the annual dinner at the Union on May 19 sixteen members of the class were present. After the dinner some business was transacted, which will be described in the annual report to be issued soon. After the business meeting Mr. George W. Rolfe of the Chemical Department gave a very interesting illustrated talk on Porto Rico. The following fellows were present: Aldrich, H. S. Baker, Barnaby, Bridges, M. H. Clark, Eustis, Goodwin, Haddock, Howard, Howes, Merrill, Nutter, Stiles, Swett, Thwing, and W. H. Adams. At the meeting it was decided to have no gathering on Commencement Day. Another marriage in the class has been brought to my knowledge. Whitehead was married to Miss Edith Elizabeth Leavens, of Medford, Mass., on June 14, 1904. The following members of the class who have been assistants at the Institute were made instructors by the Corporation last May: Adams, Ruxton, and Swett in mechanical engineering, Buhler in heat measurements, and Howard in civil engineering. The following list will give the latest information that the secretary has: C. S. Aldrich is at the Institute.—Ancona is with the Vermont Marble Company, Proctor, Vt.—Atwood is with Atwood & McManus, Chelsea, Mass.—C. H. Avery is attending the Lowell Textile School at Lowell, Mass.—W. C. Avery is at Newton Upper Falls, Mass.—Aylsworth is with Westinghouse, Church, Kerr & Co., New York.—Ball is with the Webb C. Ball Watch Company, Cleveland, Ohio.—Barnaby is private assistant to Dr. Fay at the Institute.—Barnes is studying law at the Boston University Law School.—Barrows is in the Patent Office in Washington.—Bartlett is a civil engineer with Lockwood, Greene & Co. in their Southern office at Greenville, S.C.—C. L. Bates is in the construction department of the Canadian Pacific Railroad, and is stationed at Winnipeg, Manitoba, Can.—J. R. Bates is the representative of Wonham & Magor in Boston. His home address is Hyde Park, Mass.—Bridges is with Wallace & Co. at 70 Kilby Street, Boston. He is in the insurance

business.—S. P. Brown is a structural draughtsman with Purdy & Henderson, Boston.—W. W. Burnham is a hydrographic aid in the United States Geological Survey.—Carlisle is in the confectionery business in Boston.—Chase is with engineering department of the New York Central & Hudson River Railroad, and is stationed at Buffalo, N.Y.—G. H. Clark is engaged in experimental work in wireless telegraphy in Everett, Mass.—M. H. Clarke is chemist with the Boston Rubber Shoe Company at Fells, Mass.—Cole is with the American Radiator Company in Chicago.—Comer is sales manager with Lowell Weaving Company, Lowell, Mass.—Cook is assistant engineer on the Chicago & Alton Railroad, and is stationed at Bloomington, Ill.—F. G. Cox is with the Otis Elevator Company, and is now in London erecting elevators.—H. Crosby is with the New York Shipbuilding Company at Camden, N.J.—Cushman is civil engineer with the Metropolitan Water and Sewerage Board at Clinton, Mass.—Daniels is with the Fore River Ship and Engine Company at Quincy, Mass.—F. W. Davis is with the Boston Towel Supply Company in Boston.—W. R. Davis is a draughtsman with American Bridge Company at Cambridge, Pa.—Denham is engineering draughtsman for the Simplex Electric Heating Company, Boston.—Doran is manufacturing hat machinery at Danbury, Conn. The last time I heard from him he was on the point of starting to Europe on business.—Drake is assistant in the engineering department of the State Board of Health of Massachusetts, and is located in Boston.—Eddy is with the Ovington Manufacturing Company, Boston.—F. A. Eustis is a mining engineer with an office in Boston.—Evans is assistant erector with the Snow Steam Pump Works at Buffalo, N.Y.—Fales has left the Institute, and gone into engineering work.—Ferry is engaged in electrical engineering at Lake Forest, Ill.—Field is in the business of decorative stone and marble contracting in Brooklyn, N.Y.—Fischer is in the testing department of the General Electrical Company at Schenectady, N.Y.—Foster is assistant superintendent of the 14th Street Station of the Consolidated Gas Company of New York. His home is in Brooklyn.—Gaenslen is a mining engineer at San Antonio, Tex.—Garcelon is electrical engineer with the Westinghouse Electrical and Manufact-

uring Company at Wilkesburg, Pa.—Gilker is with the American Telephone and Telegraph Company at Pawtucket, R.I.—Gleason is with the Green Economizer Company in Boston.—Goodwin is metallurgist for the American Zinc Extraction Company in Boston.—Gould is in the engineering department of the New England Telephone and Telegraph Company in Boston.—Hamilton is a second lieutenant in the United States Marine Corps.—Hanson is a manufacturing chemist in Reading, Mass.—Harlow is engineer with the Hotel Rennert Company in Baltimore, Md.—Harrigan is granolithic inspector for the city of Boston.—Harris is with the Worumbro Manufacturing Company in Bath, Me.—Haskell is studying for a Doctor of Philosophy degree at the Institute.—Hickok is designing grain elevators in Minneapolis, Minn.—Howes is with Wells Brothers Company, contractors in New York.—Humphrey is with the Link Belt Engineering Company in Philadelphia.—Hunter is assistant on the engineering corps of the Pennsylvania Railroad west of Pittsburgh.—The secretary is a designer and draughtsman for the United Concrete Machinery Company of New York, working at their Boston office. About the middle of September he goes to Brooklyn to accept the position of instructor in mechanical engineering at the Brooklyn Polytechnic Institute.

1904.

CURRIER LANG, *Sec.*, Crafton, Pa.

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Since a year ago, when the active part of the class of 1904 was bunched so compactly in half of Huntington Hall, some force has driven or drawn it to the ends of the earth, until now it is spread very, very thin over the whole of North America, and thinner still over the rest of the world. No one can realize this better than the secretary who has gained a reputation as a man of the world, merely from the varied mail and the odd, foreign-looking letters that come to him. In telling the news of our wanderers, we may as well start at the other end of the line, and come toward home as we proceed. For a starter we have W. A. Kemper broiling out in the Philippines

with the Coast and Geodetic Survey. Down in Panama there are two of us sitting up nights with the canal. They are both Course I. men, C. S. Dewis, who was with us two years and a half, and N. M. Johnson. Johnson says that if one can stand the heat and the mud and the bugs and a few other miseries, he will most likely get promoted. He got his, and at present ranks as a levelman. Dewis says: "There is a swarm of people coming down here now, civil service niggers, and all sorts of truck. About one week is enough for some, and they do occasionally go back on the next boat. We had two new rodmen assigned to us last week, and another chap about thirty drifted in yesterday. Our branch, Department of Water-works and Sewers, is putting sewer and water-pipe under ground at a fairly good rate, considering the labor that we have. We also have some roads to build, and at present I am looking after that, and keeping our lone draughtsman busy in the office. Most of the work at present is on the La Bocce road, leading over to the Pacific entrance to the canal."—From Guatemala City a queer-looking missive, stuck all over with five centavos stamps, has arrived, saying that E. H. Metcalf is travelling auditor for the Guatemala Central Railroad.—In Alaska B. A. Yoder is engaged with the Geological Survey on Topographical work.—In California H. T. Kalmus is holding down the office of principal of a preparatory school, and is liable to get married at any time. G. W. Eastman is in California also, and already married.—In Montana we have three representatives. A. W. Munster is with the machinery department of the Northern Pacific Railway, and is located at Livingston. P. M. Paine is with the Montana Mining Bureau, and has his headquarters at Helena; but his present address is Maiden, Mont. "There the fusser labor-eth, twenty-eight miles from the nearest town." What a mockery is the name of the place! Shorty Holbrook's address is Zostman, Mont. He is to be married in August.—In New Mexico Edgecombe is working at Albuquerque in the machinery department of the Santa Fé Railroad.—In Idaho C. C. Carhart is located at Pearl, Boisé County.—J. F. Card has been down in Arkansas, drilling holes in the ground, in search of zinc; that is, he was doing

this when he and Snipes, his dog, were not out hunting or fishing.—In Chicago there is a fairly good-sized delegation from the class, but not many have sent in any account of themselves. F. H. Davis is with the North-western Railroad in the roadmaster's office. His work has been entirely out of doors, bossing hunkies, directing work trains, laying steel, keeping time, shovelling snow at 25° below zero, collecting and distributing material, and doing many other odd jobs about the house. A. W. Bee, Jr., is on the engineering corps of the Chicago Terminal Division of the Pennsylvania system.—In the country between Chicago and Pittsburg, on the Pennsylvania lines, are two more of the elect. A. S. Courtney is with the motive power department, and is located at Fort Wayne, Ind.—A. P. Weymouth is on the chief engineer's corps, and is at present located at Hudson, Ohio, on the Cleveland & Pittsburg Division.—L. H. G. Bouscaren is at Terre Haute, Ind., on the construction of an electric railway. After Commencement last year Bouscaren left Boston immediately for home on account of the serious illness of his father. In November, announcement was made of his father's death. Mr. Bouscaren was a very well-known engineer of Cincinnati.—In the vicinity of Pittsburg there is a considerable colony of '04 men, the larger part of them being Course VI. men with the Westinghouse Company. Jerry Sweet, who left the Institute before finishing his course, was the original settler, and is with Westinghouse. Eager, Sanborn, and Galusha were all on the apprenticeship course at Westinghouse, and roomed together at Edgewood, a suburb east of Pittsburg, but now Galusha has gone to a position with the Vermont Marble Company at Proctor, Vt., and Eager and Sanborn have taken permanent positions with the company. Besides these there are with Westinghouse P. Carney, Kaiser, and Miller and Elwell rooming together in Wilkinsburg. The fact that Kaiser is with Westinghouse and Haar is with General Electric has led to a rumor that excited Wall Street for a while, that this division is not the result of chance, but of a far-reaching plan for the future reorganization and ultimate combination of the two great concerns.—There are nine others about Pittsburg. Hill, Stetson, Koppelman, and Lang are all with rail-

roads. Hill and Stetson are on the chief engineer's corps of the Pennsylvania lines, the former being engaged upon the preliminary work of abolishing grade crossings in Allegheny, Pa. Lang is on the Pittsburg Division of the Panhandle on the construction of three miles of third track, including changes of alignment, the abolition of a tunnel, the extension of two bridges, and the construction of two new ones. Koppelman is with the Baltimore & Ohio Railroad. Halsey French is on the four or five million-dollar work of constructing a filtration plant for the city of Pittsburg. C. L. Steinrok is with a firm of contractors who do a large amount of river and harbor work, the Baker Contract Company of Pittsburg. He is at present engaged in superintending the design of a pump boat, a dredger, and a pile-driver boat. H. H. Cerf was master mechanic for a steel plant near Pittsburg until April, but has since changed his position. Hadley and Hazeltine were living together in McKeesport until spring, both working for the National Tube Company. Hazeltine is now in a good position with the Magee Furnace Company of Boston. Hadley is in the laboratories of the Tube Company, investigating the cold crystallization of steel. This Pittsburg delegation has so far come together three times, and each time has held a little Kommerz, discussed the proposed alliance with Harvard, talked over old times and class matters generally, and abused Pittsburg. This city is a stronghold of Tech men, there being nearly two hundred within reach, but the alumni association has not, so far, been successful in binding these active and influential men into an effective force for the support of the old school and their own advancement. The '04 delegation has been considering a plan by which, with the newer graduates doing the laborious part under the direction of the older officers, a strong organization may be formed.—H. S. Kendall is with the American Telephone and Telegraph Company, and travels extensively through the South from Texas to North Carolina, "doing the territory."—At a dinner of the Technology Club of Philadelphia in March, '04 was represented by five members,—C. P. Bascom, E. R. Humphrey, Lee Phillips, Ernest Cawkins, and Dr. Pritchett. Cawkins is draughtsman with the Baldwin Locomotive Works.—

H. L. Pierce is at Renovo, Pa., with the Pennsylvania Railroad.—In Washington, D.C., Libbey and Hecht are busy in the government service. Hecht was married some time ago to Miss Irene King, of Chicago.—J. E. White is in Belfast, N.Y., on the Buffalo Extension of the Buffalo & Susquehanna Railway.—In New England there are many outside of the vicinity of Boston. R. H. Baker is in the erecting shop of the Portland Company of Portland, Me.—J. S. Currier is assistant to the mechanical engineer at the same place, and W. N. Todd is assistant to the electrical engineer.—In April J. D. McQuaid was in Berlin, N.H., on a piece of construction work for Frank B. Gilbreth.—F. N. Turgeon was assistant melter in the foundry of the Lowell Machine Shops in March, but was at that time expecting to make a change soon.—A Technology Club of Hartford, Conn., has recently been formed, and in this '04 is represented by Arnold, Downes, Peiler, D. H. Shaw, Farrel, Holcombe, and Barrett.—F. K. Merriman has lately left a good position with the New York, New Haven & Hartford Railroad, to become superintendent for Foley & Ryan, railroad contractors of South Norwalk, Conn.—The largest single delegation of the class is still about Boston. At a Kommers, held in the spring at the Tech Union, forty-one were present, and some were missing at that. One interesting feature of this Kommers was a blind salary vote, by which it was found that the highest salary paid to any member present was \$1,400, the lowest was \$300, and the average was \$750. There is not much information at hand in regard to the individual members. A large number are assistants at the Institute.—M. L. Emerson is in charge of the engineering work in Boston for the Pneumatic Service Company.—R. A. Wentworth is in a good and responsible position with the Boston Woven Hose Company. His title is chief inspector, and he is responsible for the quality of the factory's output. On June 14 he was married to Miss Marianne Palmer, of Cambridge.—On June 6 the class participated in the Commencement celebration by keeping open house in the Brunswick, visiting other classes, and holding its annual meeting and dinner at the Hotel Nottingham. This brings us down to date with our news, and, if the account has been choppy, it is because

the letters that have been written to the secretary have been mostly short statements of facts, and not interesting narratives; and, if there has been more news of our civil engineers than of any other course, it is because the secretary's personal friends have been readiest to send in news. Now you men of other courses will hear more of one another if you will send in accounts of your doings for the benefit of your friends, forgetting that you may not be personally intimate with the secretary. The class membership is growing fast; and, before the end of the summer, every past member of the class, over six hundred in all, will have had an opportunity to join us, provided the addresses that the secretary has are correct.



## NECROLOGY

GEORGE W. DAVENPORT

George W. Davenport died May 18, 1905, from an attack of appendicitis which an operation failed to help, and in his death '87 loses one of its most prominent and successful men.

Davenport entered the Institute with us in '83, and immediately became an influential figure in class affairs. He was chosen president for our Freshman year. He did not continue at the Institute throughout our course, but his interest in class affairs never lapsed. He was constant in attendance at all class gatherings, he conscientiously and energetically filled the many class offices to which he was chosen, and gave most hearty support to every movement for advancing the Institute.

At the decennial celebration in 1897 he proposed the institution of a class fund,—a suggestion that was promptly accepted and put into his hands to be carried out. This duty he performed with characteristic thoroughness, and up to the time of his death he was chairman of the trustees of the fund of the Class of '87.

Davenport was married February 2, 1889, to Miss Lolita Park, of Boston, who survives him with two charming daughters,—Marjorie and Julia, respectively thirteen and eight years old.

The following history of his work was taken from the *Buffalo Commercial*:—

Mr. Davenport was born at Fall River, Mass., in 1858, and prepared for entrance to the Massachusetts Institute of Technology, which, however, he did not enter until 1883, when he took a special course in mathematics, physics, electricity, and laboratory work. Later, in 1885, he entered the factory of the Thomson-Houston Electric Company of Lynn, and had a valuable shop and station experience. After several months of this work he entered the office of the company, and took up the organization of the Thomson-Houston International Company, which sold all products of the Thomson-Houston Company in countries other than the United States.

In the prosecution of the work of the International Company, as its general manager, he made trips to South America and Mexico, as well as a number to Europe. In Germany he represented the company in the organization of its Berlin company, of which he was a director for some years, and then became associated with the General Electric Company, the successor of the Thomson-Houston Company. From 1893 to 1899 Mr. Davenport acted as assistant to the trustees of the Street Railway and Illuminating Properties, who held, in behalf of the General Electric Company, the securities of various electric lighting and railway companies in many parts of the United States; and, serving as an officer in a number of these companies, he had charge of the operation of various important plants. In 1889 he became vice-president of the Planters' Compress Company of Boston, and in 1901 treasurer of the Fore River Ship and Engine Company of Quincy, Mass.

On January 1, 1904, Mr. Davenport was appointed third vice-president of the Niagara Falls Power Company, to relieve the second vice-president and treasurer from duties connected with the operating and accounting department of that company, and had been in charge of those departments from that date until his death.

He was a member of the Buffalo and Niagara Clubs, a member of the board of library trustees of Niagara Falls, and did much valuable work in behalf of the finance committee of the Memorial Hospital.

He was vice-president of the Buffalo Audit Company and of the Niagara Tachometer and Instrument Company, and was third vice-president of the Canadian Niagara Power Company, Niagara Development Company, and Niagara Junction Railway Company.

Mr. W. B. Rankine, vice-president of the Niagara Power Company, says of him:—

I have known Mr. Davenport for several years, having met him first in connection with the reorganization of the Tonawanda Power Company, in which he took part, representing some Boston interests, and it was at my solicitation that he came to Niagara Falls and accepted an official position in connection with the Niagara Falls Power Company. He had a commendable record for energy, ability, and integrity, and soon made himself felt in our organization. He was of the highest character, and his death is a great loss to our company, as well as to the community at large, in which he had become recognized as a broad-minded, useful citizen, whose influ-

ence was always for good. His associates feel a deep sense of personal loss at his sudden taking away.

Mr. Charles B. Davis of the General Electric Company, who was very closely associated with Davenport in his work in the Thomson-Houston Electric Company, writes:—

He was one of the best organizers that I have ever known, and his work during the first few years with the Thomson-Houston Company in Boston was directed possibly as much in that line as others, and it was through his industry that the foreign business of this company was organized and became as successful as it has been ever since. This special aptitude for organization and for carrying companies on upon broad plans led him into other fields, and he was during the past ten years connected with the organization of the street railway and illuminating properties, the Planters' Compress Company, the Fore River Ship Building Company, and finally with the Niagara Power Company.

## BOOK REVIEW

A METHOD FOR THE IDENTIFICATION OF PURE ORGANIC COMPOUNDS  
BY A SYSTEMATIC ANALYTICAL PROCEDURE BASED ON PHYSICAL  
PROPERTIES AND CHEMICAL REACTIONS

Volume I., Containing Classified Descriptions of 2,300 of the More Important Compounds of Carbon with Hydrogen and with Hydrogen and Oxygen. By SAMUEL PARSONS MULLIKEN, Ph.D. xii and 264 pages. New York: John Wiley & Sons. 1904.

In this volume the author presents the first large division of a new system of procedure and classification for the identification of pure organic substances. The underlying principle of the method is to apply to the compound in question a series of chemical tests of a qualitative or roughly quantitative nature, by means of which its place among the multitude of organic substances is more and more restricted, until it is brought into a group of a comparatively small number of species, within which group it is then more definitely located by the simple measurement of its boiling or melting point, after which it is finally fully identified by more specific characteristics. The method is quite analogous in principle to that employed in the identification of minerals or plants by means of the classifications of determinative mineralogy and botany. Heretofore the plan commonly followed, especially in synthetic organic laboratories, has been to submit the unknown compound to a quantitative analysis by which its elementary composition is determined,—a time-consuming process which requires for its successful execution the mastery of a special and rather difficult technique, the compound being finally distinguished from others of the same composition by a determination of its molecular weight and its physical constants or by specific chemical tests, such as may be suggested by an examination of the properties recorded in the text books for the va-

rious possible compounds. Practising and industrial chemists, unless the identification is a matter of great importance, can seldom give the time necessary for such an elementary organic analysis, and have to relinquish the problem or content themselves with a series of haphazard tests which often in the end may not lead to a final identification. The case is somewhat similar to that which would exist if the mineralogist, instead of identifying an unknown mineral by a systematic physical and qualitative chemical examination, was compelled always to resort in the first instance to a complete quantitative analysis. That the subject of analytical organic chemistry has remained so long in this unsatisfactory condition is probably due to the fact that no scientist has previously ventured to undertake the vast amount of detailed experimental investigation and literary study which is requisite in devising a process and classification by which the identification may be facilitated and the labor of future chemists economized.

That an original undertaking of such importance and magnitude should have been entered upon and successfully prosecuted to the extent indicated by the present publication by an Institute professor may well be a subject of congratulation, and may be cited as an instance that in scientific research, no less than in engineering practice, the Institute spirit of hard work and of devotion to high ideals asserts itself. To the preparation of the present volume the author, assisted to some extent by his students and associates, has devoted eight years of almost continuous labor, interrupted only by his duties as a teacher; yet two volumes still remain to be completed. Though involving a tabulation of a multitude of data taken from the original literature, it would be a great mistake to regard the work primarily as a compilation. It has involved not only critical judgment in the selection of the most suitable characteristics or reactions on which to base the classification, but also a vast amount of experimenting in working out the best method of executing the group tests, in determining the position of individual compounds in the scheme, and in devising simple processes for the final confirmation of the identity of many of the more important substances. Had the author chosen to publish these investigations

as separate articles, they would have been of much interest, entirely aside from their bearing on any scheme of identification.

Of the great value of a work of this kind as an aid not only in organic chemical research, but also, and even more, in the work of all those analytical and industrial chemists, pharmacists, and physiologists who have to deal with organic substances, there is no doubt whatever in the mind of the reviewer. From his own limited experience in synthetic organic research, the reviewer recalls three separate instances where unexpected reaction products were obtained, in each of which two or three weeks' time would have been saved if such a work could have been consulted. Yet the author must not be surprised if his work should be at first to some extent unappreciated and belittled, especially by some of those investigators in organic chemistry itself who through long-continued devotion to "research" on the purely synthetic side of the subject sometimes come to regard "original" contributions in that direction, however trivial, as more meritorious than the broader works by which the science is systematized. However this may be, the author can count on a cordial reception of his volumes from those engaged in practical work involving organic compounds.

A. A. NOYES, '86.